

APPENDIX F

Cost Estimates Calculations

Table F-1: Summary of Remedy Components, Capital Cost Elements, and O&M

Table F-2: Cost Estimate Summary – Alternative 2

Table F-3: Cost Estimate Summary – Alternative 3

Table F-4: Cost Estimate Summary – Alternative 4

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Cost worksheets (pp. F-1 to F-41)

TABLE F-1
SUMMARY OF REMEDY COMPONENTS, CAPITAL COST ELEMENTS, AND OPERATION & MAINTENANCE

Feasibility Study, Sauget Area 1, Sauget and Cahokia, Illinois

Component	Description of Capital Cost Elements	Description of O&M and Periodic Costs
1 Institutional Controls: Implement institutional controls. (Included in Alternatives 2, 3, 4, and 5)	<ul style="list-style-type: none"><u>Fencing at Site H and L:</u> Install a fence around Site H and a fence around Site L. Estimated fence lengths are 1900 ft and 900 ft, respectively.	<ul style="list-style-type: none"><u>Deed Notices and Restrictions:</u> File deed notices and restrictions for commercial/ industrial land use and to restrict excavation, where appropriate, at Sites G, H, I South, and L; Creek Segments A and B; and the Judith Lane Containment Cell.<u>Posting of Information:</u> Post information to describe required PPE and monitoring for construction workers during any necessary excavation activities at Sites G, H, I South, and L; Creek Segments A and B; and the Judith Lane Containment Cell.<u>Maintenance of ICs:</u> Maintain a database with records of the deed notices and restrictions. Maintain the fences at the Judith Lane Containment Cell, Sites G, H, and L, Creek Segment B, and the Cerro property, which includes Site I South and Creek Segment A.
2 Monitored Natural Attenuation: Install a network of monitoring wells screened in the SHU, MHU, and DHU. Perform groundwater sampling and testing for VOCs and SVOCs for 30 years, then plug and abandon the wells. (Included in Alternatives 2, 3, 4, and 5)	<ul style="list-style-type: none"><u>Installation of Monitoring Wells:</u> Use hollow-stem auger drilling equipment to install a total of 34 wells at 13 locations shown on Figure 13-1. At locations 1 through 8, install wells screened in SHU, MHU, and DHU. At locations 9 through 13, install wells screened in MHU and DHU only. Assumed well depth is 27 ft for SHU, 70 ft for MHU, and 100 ft for DHU. Construct the wells of 2-inch diameter stainless steel casing and screen and install a flush to grade completion.	<ul style="list-style-type: none"><u>Well Sampling and Testing:</u> Sample all wells semiannually for 30 years. During each event measure field parameters (pH, temperature, conductivity, ORP, dissolved oxygen). Submit samples for lab analysis of VOCs, SVOCs, alkalinity, carbon dioxide, chloride, dissolved iron, methane/ ethane/ ethene, nitrate, sulfate, and total organic carbon.<u>Well Plugging:</u> Plug the wells after 30 years of monitoring.
3 Judith Lane Containment Cell O&M: Operate and maintain existing cell and sample monitoring wells. (Included in Alternatives 2, 3, 4, and 5)	<ul style="list-style-type: none"><u>Not Applicable:</u> Installation of the Containment Cell final cover is required by the May 31, 2000 Unilateral Administrative Order related to the sediment and soils removal action, and is not part of the Sauget Area 1 FS. . Therefore, there are no capital costs in the FS cost estimates.	<ul style="list-style-type: none"><u>Operations, Inspections, Maintenance and Repairs:</u> Operate leachate collection and treatment system, inspect cover, place topsoil or seed as needed to maintain vegetative cover, mow grass, repair or replace pumps, replace carbon, and perform other maintenance tasks as needed.<u>Leachate, Effluent, and Groundwater Sampling:</u> Sample primary and secondary leachate for PCBs and chlorinated VOCs. Perform quarterly sampling of treatment system effluent for VOC, SVOCs, PCBs, and metals. Perform quarterly sampling of 10 wells for VOCs, PCBs, and metals.
4 Utility Relocation: Relocate utilities along the southern side of Queeny Avenue adjacent to Site H and a water line that cuts across Site I South. (Included in Alternatives 3, 4, and 5)	<ul style="list-style-type: none"><u>Relocation of Underground Fuel Pipeline, Telephone Line, and Water Line:</u> Relocate 14-inch diameter fuel pipeline and a buried telephone line that are in the utility corridor along the south side of Queeny Avenue adjacent to Site H. Relocate a water line at that runs crosses Site I South.	<ul style="list-style-type: none"><u>Not Applicable:</u> There are no O&M costs or periodic costs associated with utility relocation.
5 Pooled DNAPL Recovery at BR-I: Modify the existing system at well BR-I for automated recovery of DNAPL. Continue DNAPL recovery until the recovery operation has reached the limits of its effectiveness. (Included in Alternatives 3, 4, and 5)	<ul style="list-style-type: none"><u>Tank and Piping:</u> Install a larger poly tank for containment of DNAPL and water to replace the existing 500-gallon tank. Connect piping to the new tank.<u>Electrical and Tank-Full Sensor:</u> Bring electrical service to the existing pump control panel. Install a tank-full sensor and program the pump controller for automated pumping. <p>Note: The extent of pooled DNAPL near BR-I should be investigated during the remedial design phase of the project. Recovery of pooled DNAPL from additional bedrock wells in the area near BR-I should be performed if feasible based on results of this investigation. The cost estimates for the remedial alternatives do not include the costs for the additional borings near BR-I, since these borings are pre-design costs.</p>	<ul style="list-style-type: none"><u>DNAPL Recovery:</u> Recover DNAPL from BR-I using automated operations. Start with pumping once per day and decrease frequency as recovery rate decreases.<u>Site Inspections:</u> Perform site inspections and measure fluid levels in BR-I, A1-19, and tank.<u>Transportation and Disposal of DNAPL and Water:</u> Transport DNAPL and water to an approved facility for incineration.<u>System Decommissioning:</u> Decommission the DNAPL recovery system once recovery operations are no longer effective.

TABLE F-1
SUMMARY OF REMEDY COMPONENTS, CAPITAL COST ELEMENTS, AND OPERATION & MAINTENANCE
Feasibility Study, Sauget Area 1, Sauget and Cahokia, Illinois

Component	Description of Capital Cost Elements	Description of O&M and Periodic Costs
6 Subtitle C Caps at Sites G, H, I South, and L: Install RCRA Subtitle C cap at Sites G, H, I South, and L. (Included in Alternatives 3 and 4)	<ul style="list-style-type: none">• <u>Cap Areas:</u> Cap areas of Site G (inside fence), Site G West, Site H, Site I South, and Site L are 2.53 acres, 0.79 acres, 4.87 acres, 8.79 acres, and 1.08 acres, respectively.• <u>Cap Details for Site G (inside fence), Site H, and Site L:</u> See Figure 13-5. Upper two feet of cap is soil.• <u>Cap Details for Site G West:</u> Construct asphalt pavement with flexible membrane liner to cover outdoor areas surrounding the Wiese building at Site G West.• <u>Cap Details for Site I South:</u> See Figure 13-6. Upper two feet of cap is crushed stone.• <u>Stormwater Management:</u> Stormwater runoff from the low permeability covers will need to be properly managed, and this issue will be investigated during detailed design. The cost of constructing stormwater collection systems is not included in FS capital costs.	<ul style="list-style-type: none">• <u>Maintenance at Sites G, H, and L:</u> Inspect cover, place topsoil or seed as needed, and mow grass.• <u>Maintenance at Site I South:</u> Inspect cover and place additional clean rock as needed.
7 Leachate Recovery at Sites G, H, and I South: Install a grid of wells to recover leachate from the capped areas at Sites G, H, and I South. (Included in Alternative 4)	<ul style="list-style-type: none">• <u>Well Network:</u> Use hollow-stem auger drilling equipment to install a total of 19 wells at Site G, 21 wells at Site H, and 39 wells at Site I South for leachate recovery (Figure 13-7). Assume average well depth of 25 ft. Construct the wells using 4-inch diameter stainless steel casing and screen. Install flush to grade well completions.• <u>Leachate Recovery Pumps:</u> Install air-powered pumps for leachate recovery.• <u>Equipment Sheds and Electrical Distribution:</u> Install a concrete slab and equipment shed at Sites G, H, and two locations at Site I South. Bring electrical power to the equipment sheds.• <u>Compressors and Controls:</u> Install compressors and controls inside the equipment sheds.• <u>Underground Piping:</u> Install underground piping between the compressors and the leachate recovery wells.• <u>Pre-Treatment Systems:</u> Install pre-treatment systems at Sites G, H, and two at I South. The treatment train for each system includes sand filter, bag filter, and vessels of granular activated carbon. The principal objective of the pre-treatment systems is to remove PCBs from the leachate prior to discharge to the American Bottoms Regional Treatment Facility.	<ul style="list-style-type: none">• <u>Discharge to POTW:</u> Discharge effluent to the American Bottoms Regional Treatment Facility. Volume of pre-treated water sent to POTW is 41.5 million gallons/year based on 79 wells at 1 gpm each.• <u>Operations, Inspections, Maintenance, and Repairs:</u> Operate leachate collection and treatment systems and replace pumps, compressors, and granular activated carbon as needed.• <u>Effluent Sampling:</u> Collect effluent samples quarterly from the three treatment systems. Analyze samples for VOCs, SVOCs, PCBs, and metals.• <u>System Decommissioning:</u> Decommission the leachate collection and treatment system and plug the leachate recovery wells after 30 years of operation.
8 Soil or Crushed Rock Covers at Sites G, H, I South, and L: Install soil covers at Sites G, H, and L and a crushed rock cover at Site I South. Alternatives 3, 4, and 5 include soil cover at Site L. Alternative 5 includes soil covers at Site G and H and a crushed rock cover at Site I South.	<ul style="list-style-type: none">• <u>Cover Areas:</u> The surface areas of Site G (inside fence), Site G West, Site H, Site I South, and Site L are 2.53 acres, 0.79 acres, 4.87 acres, 8.79 acres, and 1.08 acres, respectively.• <u>Cover Details for Site G (inside fence), Site H, and Site L:</u> Place general fill as needed to achieve contours, then place two feet of soil (see Figure 13-8).• <u>Cap Details for Site G West:</u> Construct asphalt pavement to cover outdoor areas surrounding the Wiese building at Site G West.• <u>Cover Details for Site I South:</u> Place general fill as needed to achieve contours, then place two feet of crushed stone (see Figure 13-9).	<ul style="list-style-type: none">• <u>Maintenance at Sites G, H, and L:</u> Inspect cover, place topsoil or seed as needed, and mow grass.• <u>Maintenance at Site I South:</u> Inspect cover and place additional clean rock as needed.

TABLE F-1
SUMMARY OF REMEDY COMPONENTS, CAPITAL COST ELEMENTS, AND OPERATION & MAINTENANCE

Feasibility Study, Sauget Area 1, Sauget and Cahokia, Illinois

Component	Description of Capital Cost Elements	Description of O&M and Periodic Costs
9 Pulsed Air Biosparging Pilot Test at Site I South: Conduct a pulsed air biosparging pilot test at a location at Site I South. (Included in Alternative 5)	<ul style="list-style-type: none">• <u>Installation of Pilot Test Wells:</u> Use sonic drilling equipment to install eight sparge wells (four at 70 ft and four at 100 ft), four passive vent wells at 35 ft, and twenty monitoring wells (ten at 70 ft and ten at 100 ft). Construct the wells of 2-inch diameter stainless steel casing and screen. Install flush to grade well completions. Collect soil samples and analyze for VOCs to establish baseline conditions.• <u>Equipment Shed and Electrical Distribution:</u> Install a concrete slab and equipment shed at one location at Site I South. Bring electrical power to the equipment shed.• <u>Compressor and Control System:</u> Install compressor and control system inside the equipment shed.• <u>Carbon Canister:</u> Install a carbon canister to treat vapors that emanate from the passive vent wells. The four wells will be manifolded to the carbon canister.• <u>Underground Piping:</u> Install underground piping between the compressor and the sparge wells and between the passive vent wells and the carbon canister. Include piping for electrical supply. <p>Note: Following completion of the pilot test and prior to full-scale design of the PABS systems at Sites G, H, and I South, additional soil borings would be needed to more precisely delineate the extent of the residual DNAPL areas shown on Figure 13-10. The cost estimates for the remedial alternatives do not include the costs for the additional borings, since these borings are pre-design costs.</p>	<ul style="list-style-type: none">• <u>Perform Pilot Test:</u> Perform a one-year pilot test using the four sets of sparge wells at Site I.• <u>Monitoring and Sampling:</u> Perform pre-startup groundwater and soil sampling (1 event), intensive monitoring dissolved oxygen levels during first month of operation (22 events), routine groundwater VOC and SVOC sampling and analysis during system operation (7 events), routine monitoring of VOC concentrations in passive vent wells, and post-operation soil sampling (1 event).
10 Pulsed Air Biosparging at DNAPL Areas at Sites G, H, and I South: Install and operate pulsed air biosparging systems at Sites G, H, and I South. (Included in Alternative 5)	<ul style="list-style-type: none">• <u>Installation of Sparge Wells, Passive Vent Wells, and Monitoring Wells:</u> Use sonic drilling equipment to install well clusters at 12 locations at Site G, 15 locations at Site H, 55 locations at Site I South (Figure 13-10). At each location install two sparge wells, one at 70 ft and one at 100 ft. At each location install a passive vent well at 35 ft. Soil sampling and testing will be conducted to establish baseline conditions. A network of monitoring well will need to be determined based on the results of the pilot test. Construct the wells of 2-inch diameter stainless steel casing and screen. Install flush to grade well completions.• <u>Equipment Sheds and Electrical Distribution:</u> Install a concrete slab and equipment shed at seven locations (Sites G, H, and five locations at Site I South). Bring electrical power to the equipment sheds.• <u>Compressors and Controls:</u> Install compressors and controls inside the equipment sheds.• <u>Carbon Canisters:</u> Install carbon canisters to treat vapors that emanate from the passive vent wells. Several wells will be manifolded to each carbon canister.• <u>Underground Piping:</u> Install underground piping between the compressors and the sparge wells and between the passive vent wells and the carbon canisters. Include piping for electrical supply.	<ul style="list-style-type: none">• <u>Attended Sparging Operations:</u> Perform twice weekly inspections of the biosparging system. Replace granular activated carbon drums as needed. Replace compressors as needed.• <u>Effluent Sampling:</u> Collect vapor samples monthly from the vent wells. Analyze samples for VOCs.• <u>Groundwater Monitoring and Soil Sampling:</u> A detailed source area monitoring plan will be developed after the completion of the pilot test. Currently, it is envisioned that semi-annual groundwater sampling at monitoring wells in the source areas will be conducted to monitor VOC and SVOC concentrations. Dissolved oxygen levels will be monitored intensively during system startup. Soil samples will be collected during monitoring well installation and at the conclusion of pulsed air biosparging operations to quantify treatment effectiveness.• <u>System Decommissioning:</u> Decommission the biosparging system and plug the sparge wells and passive vent wells after the systems have reached the limits of their effectiveness.

Table F-2
Cost Estimate Summary- Alternative 2
Sauget Area 1 FS, Sauget and Cahokia, IL

Description of Alternative 2:

Alternative 2 includes MNA, Judith Lane Containment cell O&M, and institutional controls.
Capital costs occur in Year 0. Annual O&M costs occur in years 1 to 30.

CAPITAL COSTS

DESCRIPTION	QTY	UNITS	UNIT RATE	TOTAL
Installation of Wells for MNA Sampling Program				
Monitoring wells in SHU	8	EA	\$3,400	\$27,200
Monitoring wells in MHU	13	EA	\$6,600	\$85,800
Monitoring wells in DHU	13	EA	\$7,800	\$101,400
SUBTOTAL				\$214,400
Contingency	20%			\$42,880 10% scope + 10% bid
SUBTOTAL				\$257,280
Project Management	8%			\$20,582
Remedial Design	15%			\$38,592
Construction Management	10%			\$25,728
Institutional Controls				
Institutional Controls Plan	1	LS	\$8,000	\$8,000
Security Fence at Sites H and L	2800	LF	\$53	\$148,702
Hazardous Waste Signing	14	EA	\$72	\$1,011
Prepare & file deed notices	1	LS	\$20,000	\$20,000 Legal fees
Site information database	1	LS	\$5,000	\$5,000 Set up data mgt
SUBTOTAL				\$182,713 system
TOTAL CAPITAL COST				\$524,895

Table F-2
Cost Estimate Summary- Alternative 2
Sauget Area 1 FS, Sauget and Cahokia, IL

O&M COSTS, Years 1 to 30

DESCRIPTION	QTY	UNITS	UNIT RATE	TOTAL
MNA Sampling (34 wells for VOCs, SVOCs, geochemical indicators)				
Semiannual GW sampling & testing	2	1/2-YR	\$37,300	\$74,600
Annual GW monitoring report	1	YR	\$15,000	\$15,000
SUBTOTAL				\$89,600
Judith Lane Containment Cell O&M				
Judith Lane Containment Cell O&M	1	YR	\$30,000	\$30,000
Judith Lane Containment Cell Well	4	QTR	\$4,900	\$19,600
SUBTOTAL				\$49,600
SUBTOTAL				\$139,200
Contingency	20%			\$27,840 10% scope + 10% bid
SUBTOTAL				\$167,040
Project Management	10%			\$16,704
Technical Support	10%			\$16,704
ICs - site info database	1	LS	\$2,500	\$2,500 Update database
TOTAL ANNUAL O&M COST				\$202,948

Table F-2
Cost Estimate Summary- Alternative 2
Sauget Area 1 FS, Sauget and Cahokia, IL

PERIODIC COSTS

DESCRIPTION	YEAR	QTY	UNITS	UNIT RATE	TOTAL
Five Year Review Report	5	1	LS	\$30,000	\$30,000 Report at end of Year 5
Update ICs Plan	5	1	LS	\$3,000	\$3,000 Updated plan
SUBTOTAL					\$33,000
Five Year Review Report	10	1	LS	\$20,000	\$20,000 Report at end of Year 10
Update ICs Plan	10	1	LS	\$3,000	\$3,000 Updated plan
SUBTOTAL					\$23,000
Five Year Review Report	15	1	LS	\$20,000	\$20,000 Report at end of Year 15
Update ICs Plan	15	1	LS	\$3,000	\$3,000 Updated plan
SUBTOTAL					\$23,000
Five Year Review Report	20	1	LS	\$20,000	\$20,000 Report at end of Year 20
Update ICs Plan	20	1	LS	\$3,000	\$3,000 Updated plan
SUBTOTAL					\$23,000
Five Year Review Report	25	1	LS	\$20,000	\$20,000 Report at end of Year 25
Update ICs Plan	25	1	LS	\$3,000	\$3,000 Updated plan
SUBTOTAL					\$23,000
Five Year Review Report	30	1	LS	\$20,000	\$20,000 Report at end of Year 30
Update ICs Plan	30	1	LS	\$3,000	\$3,000 Updated plan
Plugging of Monitoring Wells	30	1	LS	\$26,600	\$26,600
SUBTOTAL					\$49,600

TOTAL PERIODIC COST

\$174,600

Table F-2
Cost Estimate Summary- Alternative 2
Sauget Area 1 FS, Sauget and Cahokia, IL

PRESENT VALUE ANALYSIS					
COST TYPE	YEAR	TOTAL COST	TOTAL COST PER YEAR	DISCOUNT FACTOR (7%)	PRESENT VALUE
Capital Cost	0	\$524,895	\$524,895	1.000	\$524,895
Annual O&M Cost	1-30	\$6,088,440	\$202,948	see calc table	\$2,517,461
Periodic Cost	5	\$33,000	\$33,000	0.713	\$23,529
Periodic Cost	10	\$23,000	\$23,000	0.508	\$11,692
Periodic Cost	15	\$23,000	\$23,000	0.362	\$8,336
Periodic Cost	20	\$23,000	\$23,000	0.258	\$5,944
Periodic Cost	25	\$23,000	\$23,000	0.184	\$4,238
Periodic Cost	30	\$49,600	\$49,600	0.131	\$6,516
		\$6,787,935			\$3,102,610

TOTAL PRESENT VALUE COST FOR ALTERNATIVE 2	\$3,102,610
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Table F-3
Cost Estimate Summary- Alternative 3
Sauget Area 1 FS, Sauget and Cahokia, IL

Description of Alternative 3:

Alternative 3 includes MNA, Judith Lane Containment Cell O&M, institutional controls, utility relocation, pooled DNAPL recovery at well BR-I, capping at Sites G, H, I South, and L. Capital costs occur in Year 0. Annual O&M costs occur in years 1 to 10 for pooled DNAPL recovery at BR-I and in years 1 to 30 for all other remedy components.

CAPITAL COSTS

DESCRIPTION	QTY	UNITS	UNIT RATE	TOTAL
Installation of Wells for MNA Sampling Program				
Monitoring wells in SHU	8	EA	\$3,400	\$27,200
Monitoring wells in MHU	13	EA	\$6,600	\$85,800
Monitoring wells in DHU	13	EA	\$7,800	\$101,400
SUBTOTAL				\$214,400
Relocation of water fuel and phone lines	1	LS	\$512,000	\$512,000
DNAPL Recovery System Modification	1	LS	\$14,400	\$14,400
Capping Site G (2.53 acres)	1	LS	\$781,400	\$781,400
Asphalt Cover site G West (0.79 acres)	1	LS	\$101,000	\$101,000
Capping Site H (4.87 acres)	1	LS	\$1,450,000	\$1,450,000
Capping Site I South (8.79 acres)	1	LS	\$2,620,000	\$2,620,000
Capping Site L (1.08 acres)	1	LS	\$300,800	\$300,800
SUBTOTAL				\$5,253,200
SUBTOTAL				\$5,994,000
Contingency	25%			\$1,498,500 15% scope + 10% bid
SUBTOTAL				\$7,492,500
Project Management	5%			\$374,625
Remedial Design	8%			\$599,400
Construction Management	6%			\$449,550
Institutional Controls				
Institutional Controls Plan	1	LS	\$8,000	\$8,000
Security Fence at Sites H and L	2800	LF	\$53	\$148,702
Hazardous Waste Signing	14	EA	\$72	\$1,011
Prepare & file deed notices	1	LS	\$20,000	\$20,000 Legal fees
Site information database	1	LS	\$5,000	\$5,000 Set up data mgt system
SUBTOTAL				\$182,713
TOTAL CAPITAL COST				\$9,098,788

Table F-3
Cost Estimate Summary- Alternative 3
Sauget Area 1 FS, Sauget and Cahokia, IL

O&M COSTS, Years 1 to 10

DESCRIPTION	QTY	UNITS	UNIT RATE	TOTAL
MNA Sampling (34 wells for VOCs, SVOCs, geochemical indicators)				
Semiannual GW sampling & testing	2	1/2-YR	\$37,300	\$74,600
Annual GW monitoring report	1	YR	\$15,000	\$15,000
SUBTOTAL				\$89,600
Judith Lane Containment Cell O&M				
Judith Lane Containment Cell O&M	1	YR	\$30,000	\$30,000
Judith Lane Containment Cell Well Sampl	4	QTR	\$4,900	\$19,600
SUBTOTAL				\$49,600
DNAPL Recovery System				
Recovery System O&M	1	YR	\$23,700	\$23,700
Transportation and Disposal of DNAPL and Water	1	YR	\$33,500	\$33,500
SUBTOTAL				\$57,200
Maintenance of Caps and Covers	1	YR	\$35,000	\$35,000
SUBTOTAL				\$231,400
Contingency	20%			\$46,280 10% scope + 10% bid
SUBTOTAL				\$277,680
Project Management	8%			\$22,214
Technical Support	10%			\$27,768
ICs-site info database	1	LS	\$2,500	\$2,500 Update database
TOTAL ANNUAL O&M COST				\$330,162

Table F-3
Cost Estimate Summary- Alternative 3
Sauget Area 1 FS, Sauget and Cahokia, IL

O&M COSTS, Years 11 to 30

DESCRIPTION	QTY	UNITS	UNIT RATE	TOTAL
MNA Sampling (34 wells for VOCs, SVOCs, geochemical indicators)				
Semiannual GW sampling & testing	2	1/2-YR	\$37,300	\$74,600
Annual GW monitoring report	1	YR	\$15,000	\$15,000
SUBTOTAL				\$89,600
Judith Lane Containment Cell O&M				
Judith Lane Containment Cell O&M	1	YR	\$30,000	\$30,000
Judith Lane Containment Cell Well Sampl	4	QTR	\$4,900	\$19,600
SUBTOTAL				\$49,600
DNAPL Recovery System O&M (not applicable)				\$0
Maintenance of Caps and Covers	1	YR	\$35,000	\$35,000
SUBTOTAL				\$174,200
Contingency	20%			\$34,840 10% scope + 10% bid
SUBTOTAL				\$209,040
Project Management	8%			\$16,723
Technical Support	10%			\$20,904
ICs-site info database	1	LS	\$2,500	\$2,500 Update database
				\$40,127
TOTAL ANNUAL O&M COST				\$249,167

Table F-3
Cost Estimate Summary- Alternative 3
Sauget Area 1 FS, Sauget and Cahokia, IL

PERIODIC COSTS

DESCRIPTION	YEAR	QTY	UNITS	UNIT RATE	TOTAL
Five Year Review Report	5	1	LS	\$30,000	\$30,000 Report at end of Year 5
Update ICs Plan	5	1	LS	\$3,000	\$3,000 Updated plan
SUBTOTAL					\$33,000
Five Year Review Report	10	1	LS	\$20,000	\$20,000 Report at end of Year 10
Update ICs Plan	10	1	LS	\$3,000	\$3,000 Updated plan
SUBTOTAL					\$23,000
Five Year Review Report	15	1	LS	\$20,000	\$20,000 Report at end of Year 15
Update ICs Plan	15	1	LS	\$3,000	\$3,000 Updated plan
SUBTOTAL					\$23,000
Five Year Review Report	20	1	LS	\$20,000	\$20,000 Report at end of Year 20
Update ICs Plan	20	1	LS	\$3,000	\$3,000 Updated plan
SUBTOTAL					\$23,000
Five Year Review Report	25	1	LS	\$20,000	\$20,000 Report at end of Year 25
Update ICs Plan	25	1	LS	\$3,000	\$3,000 Updated plan
SUBTOTAL					\$23,000
Five Year Review Report	30	1	LS	\$20,000	\$20,000 Report at end of Year 30
Update ICs Plan	30	1	LS	\$3,000	\$3,000 Updated plan
Plugging of Monitoring Wells	30	1	LS	\$26,600	\$26,600
SUBTOTAL					\$49,600
TOTAL PERIODIC COST					\$174,600

PRESENT VALUE ANALYSIS

COST TYPE	YEAR	TOTAL COST	TOTAL COST PER YEAR	DISCOUNT FACTOR (7%)	PRESENT VALUE
Capital Cost	0	\$9,098,788	\$9,098,788	1.000	\$ 9,098,788
Annual O&M Cost 1-10	1-10	\$3,301,624	\$330,162	see calc	\$ 2,318,923
Annual O&M Cost 11-30	11-30	\$4,983,344	\$249,167	see calc	\$ 1,341,880
Periodic Cost	5	\$33,000	\$33,000	0.713	\$ 23,529
Periodic Cost	10	\$23,000	\$23,000	0.508	\$ 11,692
Periodic Cost	15	\$23,000	\$23,000	0.362	\$ 8,336
Periodic Cost	20	\$23,000	\$23,000	0.258	\$ 5,944
Periodic Cost	25	\$23,000	\$23,000	0.184	\$ 4,238
Periodic Cost	30	\$49,600	\$49,600	0.131	\$ 6,516
		\$17,558,356			\$12,819,844

TOTAL PRESENT VALUE COST FOR ALTERNATIVE 3

\$12,819,844

Table F-4
Cost Estimate Summary- Alternative 4
Sauget Area 1 FS, Sauget and Cahokia, IL

Description of Alternative 4:

Alternative 4 includes MNA, Judith Lane Containment Cell O&M, institutional controls, utility relocation, pooled DNAPL recovery at well BR-I, capping at Sites G, H, I South and L; leachate recovery at Sites G, H, and I South.

Capital costs occur in Year 0. Annual O&M costs occur in years 1 to 10 for pooled DNAPL recovery at BR-I and in years 1 to 30 for all other remedy components.

CAPITAL COSTS					
	DESCRIPTION	QTY	UNITS	UNIT RATE	TOTAL
Installation of Wells for MNA Sampling Program	Monitoring wells in SHU	8	EA	\$3,400	\$27,200
	Monitoring wells in MHU	13	EA	\$6,600	\$85,800
	Monitoring wells in DHU	13	EA	\$7,800	\$101,400
	SUBTOTAL				\$214,400
	Relocation of water, fuel, and phone lines	1	LS	\$512,000	\$512,000
	DNAPL Recovery System Modification	1	LS	\$14,400	\$14,400
	Capping Site G (2.53 acres)	1	LS	\$781,400	\$781,400
	Asphalt Cover site G West (0.79 acres)	1	LS	\$101,000	\$101,000
	Capping Site H (4.87 acres)	1	LS	\$1,450,000	\$1,450,000
	Capping Site I South (8.79 acres)	1	LS	\$2,620,000	\$2,620,000
	Capping Site L (1.08 acres)	1	LS	\$300,800	\$300,800
	SUBTOTAL				\$5,253,200
	Leachate System Installation				
	Site G Wells and pumps	19	EA	\$7,700	\$146,300
	Treatment system/piping/electrical	1	EA	\$148,000	\$148,000
	Site H Wells and pumps	21	EA	\$7,700	\$161,700
	Treatment system/piping/electrical	1	EA	\$127,600	\$127,600
	Site I South Wells and pumps	39	EA	\$7,700	\$300,300
	Treatment system/piping/electrical	1	EA	\$321,000	\$321,000
	SUBTOTAL				\$1,204,900
	SUBTOTAL				\$7,198,900
	Contingency	25%			\$1,799,725 15% scope + 10% bid
SUBTOTAL					\$8,998,625
	Project Management	5%			\$449,931
	Remedial Design	8%			\$719,890
	Construction Management	6%			\$539,918
	Institutional Controls				
	Institutional Controls Plan	1	LS	\$8,000	\$8,000
	Security Fence at Sites H and L	2800	LF	\$53	\$148,702
	Hazardous Waste Signing	14	EA	\$72	\$1,011
	Prepare & file deed notices	1	LS	\$20,000	\$20,000 Legal fees
	Site information database	1	LS	\$5,000	\$5,000 Set up data mgt system
	SUBTOTAL				\$182,713
TOTAL CAPITAL COST					\$10,891,077

Table F-4
Cost Estimate Summary- Alternative 4
Sauget Area 1 FS, Sauget and Cahokia, IL

O&M COSTS, Years 1 to 10				
DESCRIPTION	QTY	UNITS	UNIT RATE	TOTAL
MNA Sampling (34 wells for VOCs, SVOCs, geochemical indicators)				
Semiannual GW sampling & testing	2	1/2-YR	\$37,000	\$74,000
Annual GW monitoring report	1	YR	\$15,000	\$15,000
SUBTOTAL				\$89,000
Judith Lane Containment Cell O&M				
Judith Lane Containment Cell O&M	1	YR	\$30,000	\$30,000
Judith Lane Containment Cell Well Sampling	4	QTR	\$4,900	\$19,600
SUBTOTAL				\$49,600
DNAPL Recovery System				
Site Vists	1	YR	\$23,700	\$23,700
DNAPL Disposal	1	YR	\$33,500	\$33,500
SUBTOTAL				\$57,200
Maintenance of Caps and Covers	1	LS	\$35,000	\$35,000
Leachate Recovery System O&M	1	LS	\$450,200	\$450,200
SUBTOTAL				\$681,000
Contingency	20%			\$136,200 10% scope + 10% bid
SUBTOTAL				\$817,200
Project Management	8%			\$65,376
Technical Support	10%			\$81,720
ICs - site info database	1	LS	\$2,500	\$2,500 Update database
TOTAL ANNUAL O&M COST				\$966,796

Table F-4
Cost Estimate Summary- Alternative 4
Sauget Area 1 FS, Sauget and Cahokia, IL

O&M COSTS, Years 11 to 30

DESCRIPTION	QTY	UNITS	UNIT RATE	TOTAL
MNA Sampling (34 wells for VOCs, SVOCs, geochemical indicators)				
Semiannual GW sampling & testing	2	1/2-YR	\$37,000	\$74,000
Annual GW monitoring report	1	YR	\$15,000	\$15,000
SUBTOTAL				\$89,000
Judith Lane Containment Cell O&M				
Judith Lane Containment Cell O&M	1	YR	\$30,000	\$30,000
Judith Lane Containment Cell Well Sampling	4	QTR	\$4,900	\$19,600
SUBTOTAL				\$49,600
DNAPL Recovery System (not applicable)				\$0
Maintenance of Caps and Covers	1	LS	\$ 35,000.00	\$35,000
Leachate Recovery System O&M	1	LS	\$ 450,200.00	\$450,200
SUBTOTAL				\$623,800
Contingency	20%			\$124,760 10% scope + 10% bid
SUBTOTAL				\$748,560
Project Management	8%			\$59,885
Technical Support	10%			\$74,856
ICs - site info database	1	LS	\$2,500	\$2,500 Update database

TOTAL ANNUAL O&M COST

\$885,801

Table F-4
Cost Estimate Summary- Alternative 4
Sauget Area 1 FS, Sauget and Cahokia, IL

PERIODIC COSTS

DESCRIPTION	YEAR	QTY	UNITS	UNIT RATE	TOTAL
Five Year Review Report	5	1	EA	\$50,000	\$50,000 Report at end of Year 5
Update ICs Plan	5	1	EA	\$3,000	\$3,000 Updated plan
SUBTOTAL					\$53,000
Five Year Review Report	10	1	EA	\$30,000	\$30,000 Report at end of Year 10
Update ICs Plan	10	1	EA	\$3,000	\$3,000 Updated plan
SUBTOTAL					\$33,000
Five Year Review Report	15	1	EA	\$30,000	\$30,000 Report at end of Year 15
Update ICs Plan	15	1	EA	\$3,000	\$3,000 Updated plan
SUBTOTAL					\$33,000
Five Year Review Report	20	1	EA	\$30,000	\$30,000 Report at end of Year 20
Update ICs Plan	20	1	EA	\$3,000	\$3,000 Updated plan
SUBTOTAL					\$33,000
Five Year Review Report	25	1	EA	\$30,000	\$30,000 Report at end of Year 25
Update ICs Plan	25	1	EA	\$3,000	\$3,000 Updated plan
SUBTOTAL					\$33,000
Five Year Review Report	30	1	EA	\$30,000	\$30,000 Report at end of Year 30
Update ICs Plan	30	1	EA	\$3,000	\$3,000 Updated plan
Plugging of Monitoring Wells	30	1	LS	\$26,600	\$26,600
Plugging Leachate Wells	30	1	LS	\$31,000	\$31,000
Decomission Leachate System	30	4	LS	\$2,500	\$10,000
SUBTOTAL					\$100,600
TOTAL PERIODIC COST					\$285,600

PRESENT VALUE ANALYSIS

COST TYPE	YEAR	TOTAL COST	TOTAL COST PER YEAR	DISCOUNT FACTOR (7%)	PRESENT VALUE
Capital Cost	0	\$10,891,077	\$10,891,077	1.000	\$10,891,077
Annual O&M Cost	1 to 10	\$9,667,960	\$966,796	see calc table	\$6,790,371
Annual O&M Cost	11 to 30	\$17,716,016	\$885,801	see calc table	\$4,770,446
Periodic Cost	5	\$53,000	\$53,000	0.713	\$37,788
Periodic Cost	10	\$33,000	\$33,000	0.508	\$16,776
Periodic Cost	15	\$33,000	\$33,000	0.362	\$11,961
Periodic Cost	20	\$33,000	\$33,000	0.258	\$8,528
Periodic Cost	25	\$33,000	\$33,000	0.184	\$6,080
Periodic Cost	30	\$100,600	\$100,600	0.131	\$13,216
		\$38,560,653			\$22,546,242

TOTAL PRESENT VALUE COST FOR ALTERNATIVE 4 \$22,546,242

Table F-5
Cost Estimate Summary- Alternative 5
Sauget Area 1 FS, Sauget and Cahokia, IL

Description of Alternative 5:

Alternative 5 includes MNA, Judith Lane Containment Cell O&M, institutional controls, utility relocation, pooled DNAPL recovery at well BR-I, soil or gravel covers at Sites G, H, I South, and L; and biosparging at DNAPL areas at Sites G, H, and I South. Capital costs occur in Year 0. Annual O&M costs occur in years 1 to 10 for biosparging at Sites G, H, and I South and pooled DNAPL recovery at BR-I. Annual O&M costs occur in years 1 to 30 for all other remedy components.

CAPITAL COSTS

DESCRIPTION	QTY	UNITS	UNIT RATE	TOTAL
Installation of Wells for MNA Sampling Program				
Monitoring wells in SHU	8	EA	\$3,400	\$27,200
Monitoring wells in MHU	13	EA	\$6,600	\$85,800
Monitoring wells in DHU	13	EA	\$7,800	\$101,400
SUBTOTAL				\$214,400
Relocation of water fuel and phone lines	1	LS	\$512,000	\$512,000
DNAPL Recovery System Modification	1	LS	\$14,400	\$14,400
Soil Cover Site G (2.53 acres)	1	LS	\$383,000	\$383,000
Asphalt Cover Site G West (0.79 acres)	1	LS	\$101,000	\$101,000
Soil Cover Site H (4.87 acres)	1	LS	\$731,000	\$731,000
Rock Cover Site I South (8.79 acres)	1	LS	\$695,000	\$695,000
Soil Cover Site L (1.08 acres)	1	LS	\$148,000	\$148,000
SUBTOTAL				\$2,058,000
Biosparging PilotTest				
Biosparge Well Pairs (MHU & DHU)	4	EA	\$13,600	\$54,400
Vent Wells (35ft)	4	EA	\$4,200	\$16,800
Monitoring Well Pairs (MHU & DHU)	10	EA	\$13,600	\$136,000
Install system, startup, operate 1 year and report	1	LS	\$213,000	\$213,000
SUBTOTAL				\$420,200
Biosparging System Installation				
Biosparge Well Pairs (MHU & DHU)	78	EA	\$13,600	\$1,060,800
Vent Wells (35ft)	78	EA	\$4,200	\$327,600
Install Piping, compressors, enclosures, controls	1	LS	\$860,000	\$860,000
SUBTOTAL				\$2,248,400
SUBTOTAL				\$5,467,400
Contingency	25%			\$1,366,850 15% scope + 10% bid
SUBTOTAL				\$6,834,250
Project Management	5%			\$341,713
Remedial Design	8%			\$546,740
Construction Management	6%			\$410,055
Institutional Controls				
Institutional Controls Plan	1	LS	\$8,000	\$8,000
Security Fence at Sites H and L	2800	LF	\$53	\$148,702
Hazardous Waste Signing	14	EA	\$72	\$1,011
Prepare & file deed notices	1	LS	\$20,000	\$20,000 Legal fees
Site information database	1	LS	\$5,000	\$5,000 Set up data mgt system
SUBTOTAL				\$182,713
TOTAL CAPITAL COST				\$8,315,471

Table F-5
Cost Estimate Summary- Alternative 5
Sauget Area 1 FS, Sauget and Cahokia, IL

O&M COSTS, Years 1 to 10

DESCRIPTION	QTY	UNITS	UNIT RATE	TOTAL
MNA Sampling (34 wells for VOCs, SVOCs, geochemical indicators)				
Semiannual GW sampling & testing	2	1/2-YR	\$37,300	\$74,600
Annual GW monitoring report	1	YR	\$15,000	<u>\$15,000</u>
SUBTOTAL				\$89,600
Judith Lane Containment Cell O&M				
Judith Lane Containment Cell O&M	1	YR	\$30,000	\$30,000
Judith Lane Containment Cell Well Sampling	4	QTR	\$4,900	<u>\$19,600</u>
SUBTOTAL				\$49,600
DNAPL Recovery System				
Recovery System O&M	1	YR	\$23,700	\$23,700
Transportation and Disposal of DNAPL and Water	1	YR	\$33,500	<u>\$33,500</u>
SUBTOTAL				\$57,200
Maintenance of Covers	1	YR	\$35,000	\$35,000
Biosparging System O&M	1	YR	\$243,000	\$243,000
SUBTOTAL				\$474,400
Contingency	25%			<u>\$118,600</u> 15% scope + 10% bid
SUBTOTAL				\$593,000
Project Management	8%			\$47,440
Technical Support	10%			\$59,300
ICs - site info database	1	LS	\$1,000	<u>\$1,000</u> Update database

TOTAL ANNUAL O&M COST

\$700,740

Table F-5
Cost Estimate Summary- Alternative 5
Sauget Area 1 FS, Sauget and Cahokia, IL

O&M COSTS, Years 11 to 30				
DESCRIPTION	QTY	UNITS	UNIT RATE	TOTAL
MNA Sampling (34 wells for VOCs, SVOCs, geochemical indicators)				
Semiannual GW sampling & testing	2	1/2-YR	\$37,300	\$74,600
Annual GW monitoring report	1	YR	\$15,000	\$15,000
SUBTOTAL				\$89,600
Judith Lane Containment Cell O&M				
Judith Lane Containment Cell O&M	1	YR	\$30,000	\$30,000
Judith Lane Containment Cell Well Sampling	4	QTR	\$4,900	\$19,600
SUBTOTAL				\$49,600
DNAPL Recovery System O&M (not applicable)				\$0
Maintenance of Covers	1	YR	\$35,000	\$35,000
Biosparging System O&M (not applicable)				\$0
SUBTOTAL				\$174,200
Contingency	25%			\$43,550 15% scope + 10% bid
SUBTOTAL				\$217,750
Project Management	8%			\$17,420
Technical Support	10%			\$21,775
ICs - site info database	1	LS	\$1,000	\$1,000 Update database
TOTAL ANNUAL O&M COST				\$257,945

Table F-5
Cost Estimate Summary- Alternative 5
Sauget Area 1 FS, Sauget and Cahokia, IL

PERIODIC COSTS

DESCRIPTION	YEAR	QTY	UNITS	UNIT RATE	TOTAL
Five Year Review Report	5	1	LS	\$50,000	\$50,000 Report at end of Year 5
Update ICs Plan	5	1	LS	\$3,000	\$3,000 Updated plan
SUBTOTAL					\$53,000
Five Year Review Report	10	1	LS	\$30,000	\$30,000 Report at end of Year 10
Update ICs Plan	10	1	LS	\$3,000	\$3,000 Updated plan
Plug Biosparging Wells Decommission	10	1	LS	\$137,000	\$137,000
Biosparging Systems	10	7	LS	\$2,500	\$17,500
SUBTOTAL					\$187,500
Five Year Review Report	15	1	LS	\$20,000	\$20,000 Report at end of Year 15
Update ICs Plan	15	1	LS	\$3,000	\$3,000 Updated plan
SUBTOTAL					\$23,000
Five Year Review Report	20	1	LS	\$20,000	\$20,000 Report at end of Year 20
Update ICs Plan	20	1	LS	\$3,000	\$3,000 Updated plan
SUBTOTAL					\$23,000
Five Year Review Report	25	1	LS	\$20,000	\$20,000 Report at end of Year 25
Update ICs Plan	25	1	LS	\$3,000	\$3,000 Updated plan
SUBTOTAL					\$23,000
Five Year Review Report	30	1	LS	\$20,000	\$20,000 Report at end of Year 30
Update ICs Plan	30	1	LS	\$3,000	\$3,000 Updated plan
Plug Monitoring Wells	30	1	LS	\$26,600	\$26,600
SUBTOTAL					\$49,600

TOTAL PERIODIC COST

\$359,100

PRESENT VALUE ANALYSIS

COST TYPE	YEAR	TOTAL COST	TOTAL COST PER YEAR	DISCOUNT FACTOR (7%)	PRESENT VALUE
Capital Cost	0	\$ 8,315,471	\$8,315,471	1.000	\$8,315,471
Annual O&M Cost	1 to 10	\$7,007,400	\$700,740	see calc	\$4,921,705
Annual O&M Cost	11 to 30	\$5,158,900	\$257,945	see calc	\$1,389,152
Periodic Cost	5	\$53,000	\$53,000	0.713	\$37,788
Periodic Cost	10	\$187,500	\$187,500	0.508	\$95,315
Periodic Cost	15	\$23,000	\$23,000	0.362	\$8,336
Periodic Cost	20	\$23,000	\$23,000	0.258	\$5,944
Periodic Cost	25	\$23,000	\$23,000	0.184	\$4,238
Periodic Cost	30	\$49,600	\$49,600	0.131	\$6,516
		<u>\$20,840,871</u>			<u>\$14,784,465</u>

TOTAL PRESENT VALUE COST FOR ALTERNATIVE 5 \$14,784,465

COST WORKSHEET - INSTALLATION OF 2-INCH DIAMETER WELL IN SHU

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

MNA
 SHU Well Inst.

Work Statement:

Install one 2-in. diameter stainless steel well in SHU to depth of 27 ft bgs using hollow-stem auger drilling rig.
 Perform continuous soil sampling during drilling. Move soil cuttings to a rolloff box using a forklift and hopper.
 Construct surface completion consisting of concrete pad and flush-mount manway. Develop well using submersible pump.

Cost per Well Installation, SHU

DESCRIPTION	QTY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Mob/demob	1	LS				30.00 \$	30.00
Level D PPE	1	DAY				30.00 \$	30.00
Hollow Stem Augering	27	L.F				11.00 \$	297.00
Well installation	1	HR				145.00 \$	145.00
Decon drilling equipment	1	HR				145.00 \$	145.00
Steam Cleaner	1	DAY				85.00 \$	85.00
Drum for decon water	1	EA				50.00 \$	50.00
Bobcat Loader with bucket	1	DAY				225.00 \$	225.00
2" x 10' Stainless Steel Flush Thread Screen	1	EA				378.00 \$	378.00
2" x 10' Stainless Steel Flush Thread Riser	2	EA				281.00 \$	562.00
2" Stainless Steel Bottom Screw Plug	1	EA				86.00 \$	86.00
2" Expandable Plug, Sch 40 & Lock	1	EA				20.00 \$	20.00
Filter Sand	9	Bags				10.00 \$	90.00
Bentonite Chips	4	Bags				10.00 \$	40.00
Bentonite Grout	3	Bags				20.00 \$	60.00
Flush Mount Well Protector 8"	1	EA				145.00 \$	145.00
2' x 2' Concrete Well Pad	1	EA				75.00 \$	75.00
Geologist (oversee well installation)	5	HR		85.00		\$	425.00
Technicians (well development)	5	HR		50.00		\$	250.00
Truck	1.5	DAY			75.00	\$	112.50
PID	1	DAY			50.00	\$	50.00
Submersible pump	0.5	DAY			75.00	\$	37.50
Generator	0.5	DAY			75.00	\$	37.50

SUBTOTAL **\$3,376**

Prime Contractor Overhead (not applicable) 0.0% **\$0**

SUBTOTAL **\$3,376**

Prime Contractor Profit (not applicable) 0.0% **\$0**

TOTAL UNIT COST \$3,376

Source of Cost Data:

Quote from Boart Longyear. Rates for geologist and technician based on typical labor rates.

Cost Adjustment Checklist:

Factor:

<input checked="" type="checkbox"/>	H&S Productivity
<input checked="" type="checkbox"/>	Escalation to Base Year
<input checked="" type="checkbox"/>	Area Cost Factor
<input checked="" type="checkbox"/>	Subcontractor Overhead and Profit
<input checked="" type="checkbox"/>	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
 Cost estimates are from 2009
 Quote from vendor for Sauget drilling
 Included in estimate

COST WORKSHEET - INSTALLATION OF 2-INCH DIAMETER WELL IN MHU

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

MNA
 MHU Well Inst.

Work Statement:

Install one 2-in diameter stainless steel well in MHU to depth of 70 ft bgs using hollow-stem auger drilling rig. Perform continuous soil sampling during drilling. Move soil cuttings to a rolloff box using a forklift and hopper. Construct surface completion consisting of concrete pad and flush-mount manway. Develop well using submersible pump.

Cost per Well Installation, MHU

DESCRIPTION	QTY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Mob/demob	1	LS				30.00	\$ 30.00
Level D PPE	1	DAY				30.00	\$ 30.00
Hollow Stem Augering	70	FT				11.00	\$ 770.00
Well Installation	3	HR				145.00	\$ 435.00
Decon drilling equipment	2	HR				145.00	\$ 290.00
Split Spoon Sampling 0-30'	12					15.00	\$ 180.00
Split Spoon Sampling 30-50'	8					19.00	\$ 152.00
Split Spoon Sampling 50-75'	10	HR				36.00	\$ 360.00
Steam Cleaner	1.5	DAY				85.00	\$ 127.50
Drum for decon water	1	EA				50.00	\$ 50.00
Bobcat Loader with bucket	1.5	DAY				225.00	\$ 337.50
2" x 10' Stainless Steel Flush Thread Screen	1	EA				378.00	\$ 378.00
2" x 10' Stainless Steel Flush Thread Riser	6	EA				281.00	\$ 1,686.00
2" Stainless Steel Bottom Screw Plug	1	EA				86.00	\$ 86.00
2" Expandable Plug, Sch 40 & Lock	1	EA				20.00	\$ 20.00
Filter Sand	9	Bags				10.00	\$ 90.00
Bentonite Chips	4	Bags				10.00	\$ 40.00
Bentonite Grout	10	Bags				20.00	\$ 200.00
Flush Mount Well Protector 8"	1	EA				145.00	\$ 145.00
2' x 2' Concrete Well Pad	1	EA				75.00	\$ 75.00
Geologist (oversee well installation)	7	HR		85.00			\$ 595.00
Technicians (well development)	5	HR		50.00			\$ 250.00
Truck	1.5	DAY			75.00		\$ 112.50
PID	1	DAY			50.00		\$ 50.00
Submersible pump	0.5	DAY			75.00		\$ 37.50
Generator	0.5	DAY			75.00		\$ 37.50

SUBTOTAL **\$6,565**

Prime Contractor Overhead (not applicable) 0.0% \$0

SUBTOTAL **\$6,565**

Prime Contractor Profit (not applicable) 0.0% \$0

TOTAL UNIT COST \$6,565

Source of Cost Data:

Quote from Boart Longyear. Rates for geologist and technician based on typical labor rates.

Cost Adjustment Checklist:

Factor:	
X	H&S Productivity
X	Escalation to Base Year
X	Area Cost Factor
X	Subcontractor Overhead and Profit
X	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
 Cost estimates are from 2009
 Quote from vendor for Sauget drilling
 Included in estimate

COST WORKSHEET - INSTALLATION OF 2-INCH DIAMETER WELL IN DHU

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

MNA
DHU Well Inst.

Work Statement:

Install one 2-in. diameter stainless steel well in DHU to depth of 100 ft bgs using hollow-stem auger drilling rig. Perform continuous soil sampling during drilling. Move soil cuttings to a rolloff box using a forklift and hopper. Construct surface completion consisting of concrete pad and flush-mount manway. Develop well using submersible pump.

Cost per Well Installation, DHU

DESCRIPTION	QTY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Mob/demob	1	LS				30.00	\$ 30.00
Level D PPE	1	LS				30.00	\$ 30.00
Hollow Stem Augering	100	FT				11.00	\$ 1,100.00
Well Installation	4	HR				145.00	\$ 580.00
Decon drilling equipment	2.5	HR				145.00	\$ 362.50
Split Spoon Sampling 75-100'	3	EA				48.00	\$ 144.00
Steam Cleaner	1.5	DAY				85.00	\$ 127.50
Drum for decon water	1	EA				50.00	\$ 50.00
Bobcat Loader with bucket	1.5	DAY				225.00	\$ 337.50
2" x 10' Stainless Steel Flush Thread Screen	1	EA				378.00	\$ 378.00
2" x 10' Stainless Steel Flush Thread Riser	9	EA				281.00	\$ 2,529.00
2" Stainless Steel Bottom Screw Plug	1	EA				86.00	\$ 86.00
2" Expandable Plug, Sch 40 & Lock	1	EA				20.00	\$ 20.00
Filter Sand	9	Bags				10.00	\$ 90.00
Bentonite Chips	4	Bags				10.00	\$ 40.00
Bentonite Grout	16	Bags				20.00	\$ 320.00
Flush Mount Well Protector 8"	1	EA				145.00	\$ 145.00
2' x 2' Concrete Well Pad	1	EA				75.00	\$ 75.00
Geologist (oversee well installation)	9	HR		85.00			\$ 765.00
Technicians (well development)	5	HR		50.00			\$ 250.00
Truck	2	DAY			75.00		\$ 150.00
PID	2	DAY			50.00		\$ 100.00
Submersible pump	0.5	DAY			75.00		\$ 37.50
Generator	0.5	DAY			75.00		\$ 37.50
SUBTOTAL							\$7,785
Prime Contractor Overhead (not applicable)					0.0%		\$0
SUBTOTAL							\$7,785
Prime Contractor Profit (not applicable)					0.0%		\$0
TOTAL UNIT COST							\$7,785

Source of Cost Data:

Quote from Boart Longyear. Rates for geologist and technician based on typical labor rates.

Cost Adjustment Checklist:

Factor:

<input checked="" type="checkbox"/>	H&S Productivity
<input checked="" type="checkbox"/>	Escalation to Base Year
<input checked="" type="checkbox"/>	Area Cost Factor
<input checked="" type="checkbox"/>	Subcontractor Overhead and Profit
<input checked="" type="checkbox"/>	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
Cost estimates are from 2009
Quote from vendor for Sauget drilling
Included in estimate

MNA
 Sampling Event

COST WORKSHEET - MNA SAMPLING EVENT

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Collect groundwater samples from a total of 34 wells using low-flow equipment.
 Collect four duplicate samples, 2 field blanks, 2 equipment blanks, 2 MS/MSDs, and 4 trip blanks. Analyze samples for VOCs, SVOCs, and geochemical indicators. Place fluids into drums. Dispose of drums at approved off-site facility.

Cost per Sampling Event

DESCRIPTION	QTY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Sampling crew	150	HR		50.00			\$7,500
Truck	8	DAY			75.00		\$600
PID	8	DAY			50.00		\$400
Interface probe	8	DAY			50.00		\$400
Pump	8	DAY			50.00		\$400
Low-flow sampling instrumentation	8	DAY			50.00		\$400
Drums	5	EA	65.00				\$325
Drum pickup / hauling - estimate	1	LS				800.00	\$800
Drum disposal (three drums) - estimate	1	LS				1,500.00	\$1,500
Testing, volatiles	48	EA				\$110	\$5,280
Testing, Semivolatiles	44	EA				\$225	\$9,900
Testing, Alkalinity	44	EA				\$9	\$396
Testing, Carbon dioxide	44	EA				\$12	\$528
Testing, Chloride	44	EA				\$9	\$396
Testing, Iron (dissolved)	44	EA				\$24	\$1,056
Testing, Methane / ethane / ethene	44	EA				\$120	\$5,280
Testing, Nitrate	44	EA				\$18	\$792
Testing, Sulfate	44	EA				\$9	\$396
Testing, Total organic carbon	44	EA				\$21	\$924
SUBTOTAL							\$37,273
Prime Contractor Overhead (not applicable)		0.0%					\$0
SUBTOTAL							\$37,273
Prime Contractor Profit (not applicable)		0.0%					\$0
TOTAL UNIT COST PER EVENT							\$37,273

Source of Cost Data:

Lab costs are based on pricing by contract lab. Rates for sampling crew and expenses are based on typical labor and expense rates for groundwater sampling projects. Rates for drum pickup, hauling and disposal are based on engineering judgment.

Cost Adjustment Checklist:

Factor:	
X	H&S Productivity
X	Escalation to Base Year
X	Area Cost Factor
X	Subcontractor Overhead and Profit
X	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
 Cost estimates are from 2009
 Cost based on typical local labor rates.
 Included in estimate

COST WORKSHEET - Monitoring Well Plugging and Abandonment

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

MNA
 Well Plugging

Work Statement:

Plugging and Abandonment of 34 monitoring wells in year 30. Wells to plug include 8 wells to 27 ft, 13 wells to 70 ft and 13 wells to 100 ft. Total footage is 2426 feet. All wells are 2-inch diameter with flush to grade well completions. Work can be performed in Level D PPE.

Cost for plugging and abandonment of 2-inch diameter monitoring wells (total footage of 1665 ft)

DESCRIPTION	QTY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Mob/demob	1	LS				495.00 \$	495.00
Rig Setup and Pull Protector	34	EA				55.00 \$	1,870.00
Pull, Grout and Cap PVC Wells	2426	FT				7.00 \$	16,982.00
Submit Abandonment report	34					35.00 \$	1,190.00
Level D PPE	10	DAY				30.00 \$	300.00
Technician (oversight)	100	HR		50.00		\$	5,000.00
Truck	10	DAY			75.00	\$	750.00
SUBTOTAL							\$26,587
Prime Contractor Overhead (not applicable)					0.0%		\$0
SUBTOTAL							\$26,587
Prime Contractor Profit (not applicable)					0.0%		\$0
TOTAL UNIT COST							\$26,587

Source of Cost Data:

Quote from Roberts Environmental Drilling. Rates for technician based on typical labor rates.

Cost Adjustment Checklist:

Factor:

<input checked="" type="checkbox"/>	H&S Productivity
<input checked="" type="checkbox"/>	Escalation to Base Year
<input checked="" type="checkbox"/>	Area Cost Factor
<input checked="" type="checkbox"/>	Subcontractor Overhead and Profit
<input checked="" type="checkbox"/>	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
 Cost estimates are from 2009
 Quote from local driller
 Included in estimate

Judith Lane Cell
 Cover Maint. & System O&M

COST WORKSHEET - Judith Lane Containment Cell O&M

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Operate and maintain existing Judith Lane Containment cell, including site inspections, sampling of system effluent and replacement of GAC.

Cost per Year per O&M of Judith Lane Containment Cell

DESCRIPTION	QTY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Maintain Vegetative Cover							
Loam or topsoil, imported topsoil, 6" deep, furnish and place	101	LCY	24.94	5.64	1.98	0.00	\$ 3,288.38
Seeding, Vegetative Cover	1	ACR	796.80	570.09	207.39	0.00	\$ 1,574.28
Fertilize, 800 Lbs/Acre, Spray from Truck	5	ACR	73.27	39.38	45.22	0.00	\$ 789.33
Mowing	10	ACR	0.00	297.82	0.00	0.00	\$ 2,978.23
Maintain Pumps & equipment	1	LS				5,000.00	\$ 5,000.00
Replace carbon	1	LS				3,000.00	\$ 3,000.00
Sampling of Effluent							
Technician	60	HR		50.00			\$ 3,000.00
Testing PCB, VOCs, SVOCs and Metals	8	EA				530.00	\$ 4,240.00
SUBTOTAL							\$23,870
							\$23,870
Prime Contractor Overhead					15.0%		\$3,581
SUBTOTAL							\$27,451
Prime Contractor Profit					10.0%		\$2,745
TOTAL UNIT COST							\$30,196

Source of Cost Data:

RACER cost software

Cost Adjustment Checklist:

Factor:

X	H&S Productivity
X	Escalation to Base Year
X	Area Cost Factor
X	Subcontractor Overhead and Profit
X	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
 Cost estimates are from 2009
 Area cost factor for Illinois is 1.15
 Included in estimate
 Includes 10% profit

COST WORKSHEET - JUDITH LANE CONTAINMENT CELL WELL SAMPLING EVENT Judith Lane Cell
Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois Well Sampling

Work Statement:

Collect groundwater samples from a total of 10 wells using low-flow equipment.
Collect one duplicate sample. Analyze all samples for VOCs, SVOCs, metals, and PCBs.
Place fluids into existing treatment plant for treatment.

Cost per Sampling Event

DESCRIPTION	QTY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Sampling crew	25	HR		50.00			\$1,250
Truck	2	DAY			75.00		\$150
PID	2	DAY			50.00		\$100
Interface probe	2	DAY			50.00		\$100
Pump	2	DAY			50.00		\$100
Low-flow sampling instrumentation	2	DAY			50.00		\$100
Testing, volatiles	11	EA				\$125	\$1,375
Testing, Metals	11	EA				\$70	\$770
Testing, PCBs	11	EA				\$90	\$990
SUBTOTAL							\$4,935
Prime Contractor Overhead (not applicable)		0.0%					\$0
SUBTOTAL							\$4,935
Prime Contractor Profit		0.0%					\$0
TOTAL UNIT COST PER QUARTER							\$4,935

Source of Cost Data:

Lab costs are based on pricing by contract lab. Rates for sampling crew and expenses are based on typical labor and expense rates for groundwater sampling projects.

Cost Adjustment Checklist:

Factor:
<input checked="" type="checkbox"/> H&S Productivity
<input checked="" type="checkbox"/> Escalation to Base Year
<input checked="" type="checkbox"/> Area Cost Factor
<input checked="" type="checkbox"/> Subcontractor Overhead and Profit
<input checked="" type="checkbox"/> Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
Cost estimates are from 2009
Cost based on typical local labor rates.
Included in estimate
Includes 10% profit

Utility Relocation
Water line, fuel pipeline, telephone cable

COST WORKSHEET - Relocation of Water Line, Fuel Pipeline, and Telephone Cable
Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Install 5800 ft of 12-inch diameter PVC force main to replace water line that crosses Site I South.
Install 1600 ft of 14-inch diameter carbon steel pipeline to replace the section in the Queeny Ave. utility corridor
Install 900 ft of above-ground telephone cable along Queeny Ave. to replace the underground telephone cable
Install a new telephone junction box.

Cost for relocation of water line, fuel pipeline, and telephone line

DESCRIPTION	QTY	Units	Materials	Labor	Equipment	SubBid	Cost	Extended Cost
Install 12" PVC force main (water line)	5800	FT						\$210,000
Install 14" carbon steel pipeline	1600	FT						\$165,000
Install poles and telephone cable	900	FT						\$20,000
Install new telephone junction box	1	LS						\$10,000
SUBTOTAL								\$405,000
Prime Contractor Overhead						15.0%		\$60,750
SUBTOTAL								\$465,750
Prime Contractor Profit						10.0%		\$46,575
TOTAL UNIT COST								\$512,325

Source of Cost Data:

Preliminary planning-level estimate from Columbia Environmental Services, Houston, TX.

Cost Adjustment Checklist:

Factor:

<input checked="" type="checkbox"/>	H&S Productivity
<input checked="" type="checkbox"/>	Escalation to Base Year
<input checked="" type="checkbox"/>	Area Cost Factor
<input checked="" type="checkbox"/>	Subcontractor Overhead and Profit
<input checked="" type="checkbox"/>	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
Cost estimates are from 2009
Area cost factor for Illinois is 1.15
Included in estimate
Includes 15% overhead and 10% profit

COST WORKSHEET - DNAPL RECOVERY SYSTEM MODIFICATION

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Purchase a 1500-gallon tank for storage of DNAPL and water at well BR-I. Bring electricity to BR-I control panel. Install tank-full switch and program controller for automated pumping. Connect piping to new tank.

Cost per Sampling Event

DESCRIPTION	QTY	UNITS	UNIT RATE	TOTAL
1500- gallon poly tank	1	EA	\$4,000	\$4,000
Ship tank to Site I South	1	EA	\$500	\$500
Unload tank	1	EA	\$300	\$300
Tank-full switch	1	EA	\$150	\$150
Electrical service to BR-I	1	EA	\$5,000	\$5,000
Field supervisor	30	HR	\$60	\$1,800
Laborer	30	HR	\$40	\$1,200
Truck	6	DAY	\$75	\$450
Piping, parts, supplies	1	EA	\$1,000	\$1,000
SUBTOTAL				\$14,400
Prime Contractor Overhead (not applicable)			0.0%	\$0
SUBTOTAL				\$14,400
Prime Contractor Profit (not applicable)			0.0%	\$0
TOTAL UNIT COST				\$14,400

Source of Cost Data:

Costs are based on engineering judgment.

Cost Adjustment Checklist:

Factor:

X	H&S Productivity
X	Escalation to Base Year
X	Area Cost Factor
X	Subcontractor Overhead and Profit
X	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
 Current year (2009) is base year
 Cost based on typical local labor rates.
 Included in estimate

COST WORKSHEET - DNAPL RECOVERY O&M AT BR-I FOR ONE YEAR

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Automated pumping of BR-I twice per week for 30-45 minutes.

Technician visits weekly to measure fluid levels in BR-I, A1-19, and the tank.

Cost per Sampling Event

DESCRIPTION	QTY	UNITS	UNIT RATE	TOTAL
Sr. Tech (weekly visits)	200	HR	\$65	\$13,000
Truck	52	EA	\$75	\$3,900
PID	52	EA	\$50	\$2,600
Electricity cost	12	Month	\$100	\$1,200
Pump Repair, Misc O&M	1	LS	\$3,000	\$3,000
SUBTOTAL				\$23,700
Prime Contractor Overhead (not applicable)			0.0%	\$0
SUBTOTAL				\$23,700
Prime Contractor Profit (not applicable)			0.0%	\$0
TOTAL UNIT COST				\$23,700

Source of Cost Data:

Costs are based on engineering judgment.

Cost Adjustment Checklist:

Factor:

<input checked="" type="checkbox"/>	H&S Productivity
<input checked="" type="checkbox"/>	Escalation to Base Year
<input checked="" type="checkbox"/>	Area Cost Factor
<input checked="" type="checkbox"/>	Subcontractor Overhead and Profit
<input checked="" type="checkbox"/>	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
Cost estimates are from 2009
Cost based on typical local labor rates.
Included in estimate

DNAPL Recovery
Transportation & Disposal

COST WORKSHEET - TRANSPORTATION AND DISPOSAL OF BR-I FLUIDS

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Pump out tank next to BR-I. Transport the fluids (DNAPL and water) to a facility for incineration. Assume approximately 1000 gallons of fluids per trip.

25 gallons of total fluids pumped per event, pumped twice a week, 52 weeks per year equals 2600 gallons of total fluids per year, and an assumed 2.6 disposal trips per year.

Annual Cost for Disposal of total fluids (DNAPL and water)

DESCRIPTION	QTY	UNITS	UNIT RATE	TOTAL
Sr. technician	9	HR	\$65	\$585
Truck	3	EA	\$75	\$225
PID	3	EA	\$50	\$150
Transportation of 1000 gal	2.6	Trip	\$2,500	\$6,500
Disposal of total fluids	2600	GAL	\$10	\$26,000
SUBTOTAL				\$33,460
Prime Contractor Overhead (not applicable)			0.0%	\$0
SUBTOTAL				\$33,460
Prime Contractor Profit (not applicable)			0.0%	\$0
TOTAL UNIT COST				\$33,460

Source of Cost Data:

Costs are based on engineering judgment.

Cost Adjustment Checklist:

Factor:

<input checked="" type="checkbox"/>	H&S Productivity
<input checked="" type="checkbox"/>	Escalation to Base Year
<input checked="" type="checkbox"/>	Area Cost Factor
<input checked="" type="checkbox"/>	Subcontractor Overhead and Profit
<input checked="" type="checkbox"/>	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
Cost estimates are from 2009
Cost based on typical local labor rates.
Included in estimate

Low K Cover
 Site G (inside fence)

COST WORKSHEET - LOW PERMEABILITY COVER AT SITE G

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Install 2.53 acres of RCRA Subtitle C cover at Site G (central and northern portion of fenced area)
 Includes clearing of vegetation and placement of unclassified fill to achieve contours.

DESCRIPTION	QTY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Clear and Grub							
Selective clearing, brush, medium clearing, with dozer and brush rake, excludes removal offsite	2.02	ACR	0.00	123.64	120.72	0.00	\$ 493.61
Clear trees, wet conditions, medium growth, 200 H.P. dozer, excludes grubbing	0.51	ACR	0.00	1,349.78	1,296.23	0.00	\$ 1,349.47
Site clearing trees, with 335 H.P. dozer, to 12" diameter	253	EA	0.00	5.11	7.45	0.00	\$ 3,177.40
Remove stumps, wet conditions, with dozer, 6" to 12" diameter	51	EA	0.00	47.93	60.36	0.00	\$ 5,522.89
Grub stumps, with 335 H.P. dozer, to 12" diameter	203	EA	0.00	3.07	5.93	0.00	\$ 1,826.99
Grub and stack, 140 H.P. dozer	285.72	CY	0.00	3.07	1.84	0.00	\$ 1,401.30
Dump Charges	1113.71	EA	15.00	0.00	0.00	0.00	\$ 16,705.65
926, 2.0 CY, Wheel Loader	21	HR	0.00	68.08	43.29	0.00	\$ 2,338.89
20 CY, Semi Dump	44	HR	0.00	63.28	58.42	0.00	\$ 5,354.97
Capping							
Unclassified Fill, 6" Lifts, Off-Site, Includes Delivery, Spreading, and Compaction	16329	CY	7.31	1.05	0.96	0.02	\$ 152,526.74
Loam or topsoil, imported topsoil, 6" deep, furnish and place	2648	LCY	24.94	5.64	1.98	0.00	\$ 86,214.06
Seeding, Vegetative Cover	2.63	ACR	796.80	570.09	207.39	0.00	\$ 4,140.35
Drainage Netting, Geotextile Fabric Heat-bonded 2 Sides	125824	SF	0.60	0.09	0.01	0.00	\$ 88,091.82
Bentonite, rolls, with geotextile fabric both sides, 3/8" thick	125824	SF	0.94	0.36	0.03	0.00	\$ 167,014.77
40 Mil Polymeric Liner, High-density Polyethylene	125824	SF	0.41	0.22	0.02	0.00	\$ 81,577.21
SUBTOTAL							\$617,736
Prime Contractor Overhead						15.0%	\$92,660
SUBTOTAL							\$710,397
Prime Contractor Profit						10.0%	\$71,040
TOTAL UNIT COST							\$781,436

Source of Cost Data:

RACER cost estimating software

Cost Adjustment Checklist:

Factor:

- ☒ H&S Productivity
- ☒ Escalation to Base Year
- ☒ Area Cost Factor
- ☒ Subcontractor Overhead and Profit
- ☒ Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
 Cost estimates are from 2009
 Area cost factor for Illinois is 1.15
 Included in estimate
 Includes 15% overhead and 10% profit

Low K Cover
 Site G West asphalt pavement

COST WORKSHEET - LOW PERMEABILITY COVER AT SITE G WEST

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Install 0.79 acres of asphalt pavement at Site G West at Wiese property

DESCRIPTION	QTY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Rough Grading, 12G, 1 Pass	4235	SY	0.00	0.23	0.16	0.00 \$	1,642.62
Fine Grading, 120G, 2 Passes	4235	SY	0.00	0.41	0.16	0.00 \$	2,426.82
Roadway Soil Excavation, with Scraper, Load & Haul Spoil	483	CY	0.00	3.79	3.87	0.00 \$	3,700.45
Compaction, subgrade, 18" wide, 8" lifts, walk behind, vibrating plate	644	ECY	0.00	2.54	0.18	0.00 \$	1,750.66
Dry Roll Gravel, Steel Roller	3867	SY	0.00	0.85	0.32	0.00 \$	4,513.41
Gravel, Delivered & Dumped	483	CY	24.36	4.33	4.56	0.00 \$	16,069.40
Concrete Curb & Gutter, 6" x 24", Formed	1130	LF	16.59	8.34	0.00	0.00 \$	28,170.69
Prime Coat	3867	SY	0.42	0.04	0.01	0.00 \$	1,820.49
Asphalt Wearing Course, 1 Pass (Line Item Includes 5% Waste)	315	TON	49.94	7.54	2.13	0.00 \$	18,801.23
Lines on pavement, parking stall, paint, white, 4" wide	77	EA	3.98	6.14	1.35	0.00 \$	882.94
SUBTOTAL							\$79,779
Prime Contractor Overhead						15.0%	\$11,967
SUBTOTAL							\$91,746
Prime Contractor Profit						10.0%	\$9,175
TOTAL UNIT COST							\$100,920

Source of Cost Data:

RACER cost estimating software

Cost Adjustment Checklist:

Factor:

Notes:

- ☒ H&S Productivity
- ☒ Escalation to Base Year
- ☒ Area Cost Factor
- ☒ Subcontractor Overhead and Profit
- ☒ Prime Contractor Overhead and Profit

Cost estimate is based on Level D
 Cost estimates are from 2009
 Area cost factor for Illinois is 1.15
 Included in estimate
 Includes 15% overhead and 10% profit

Low K Cover

COST WORKSHEET - LOW PERMEABILITY COVER AT SITE H

Site H

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Install 4.87 acres of RCRA Subtitle C cover at Site H
 Includes placement of unclassified fill to achieve contours.

DESCRIPTION	QTY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Unclassified Fill, 6" Lifts, Off-Site, Includes Delivery, Spreading, and Compaction	35397	CY	7.31	1.05	0.96	0.02 \$	330,638.07
Loam or topsoil, imported topsoil, 6" deep, furnish and place	5057	LCY	24.94	5.64	1.98	0.00 \$	164,646.71
Seeding, Vegetative Cover	5	ACR	796.80	570.09	207.39	0.00 \$	7,887.12
Drainage Netting, Geotextile Fabric Heat-bonded 2 Sides	240289	SF	0.60	0.09	0.01	0.00 \$	168,230.98
Bentonite, rolls, with geotextile fabric both sides, 3/8" thick	240289	SF	0.94	0.36	0.03	0.00 \$	318,951.97
40 Mil Polymeric Liner, High-density Polyethylene	240289	SF	0.41	0.22	0.02	0.00 \$	155,789.88

SUBTOTAL		\$1,146,145
Prime Contractor Overhead	15.0%	\$171,922
SUBTOTAL		\$1,318,066
Prime Contractor Profit	10.0%	\$131,807
TOTAL UNIT COST		\$1,449,873

Source of Cost Data:

RACER cost estimating software

Cost Adjustment Checklist:

Factor	
X	H&S Productivity
X	Escalation to Base Year
X	Area Cost Factor
X	Subcontractor Overhead and Profit
X	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
 Cost estimates are from 2009
 Area cost factor for Illinois is 1.15
 Included in estimate
 Includes 15% overhead and 10% profit

Low K Cover

COST WORKSHEET - LOW PERMEABILITY COVER AT SITE I SOUTH

Site I South

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Install 8.79 acres of RCRA Subtitle C cover at Site I South.
 Includes placement of unclassified fill to achieve contours.

DESCRIPTION	QTY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Unclassified Fill, 6" Lifts, Off-Site, Includes Delivery, Spreading, and Compaction	63967	CY	7.31	1.05	0.96	0.02 \$	597,506.16
Loam or topsoil, imported topsoil, 6" deep, furnish and place	9139	LCY	24.94	5.64	1.98	0.00 \$	297,549.20
Seeding, Vegetative Cover	9.06	ACR	796.80	570.09	207.39	0.00 \$	14,262.94
Drainage Netting, Geotextile Fabric Heat-bonded 2 Sides	434240	SF	0.60	0.09	0.01	0.00 \$	304,019.83
Bentonite, rolls, with geotextile fabric both sides, 3/8" thick	434240	SF	0.94	0.36	0.03	0.00 \$	576,396.36
40 Mil Polymeric Liner, High-density Polyethylene	434240	SF	0.41	0.22	0.02	0.00 \$	281,536.81

SUBTOTAL							\$2,071,271
Prime Contractor Overhead						15.0%	\$310,691
SUBTOTAL							\$2,381,962
Prime Contractor Profit						10.0%	\$238,196
TOTAL UNIT COST							\$2,620,158

Source of Cost Data:

RACER cost estimating software

Cost Adjustment Checklist:

Factor:

<input checked="" type="checkbox"/>	H&S Productivity
<input checked="" type="checkbox"/>	Escalation to Base Year
<input checked="" type="checkbox"/>	Area Cost Factor
<input checked="" type="checkbox"/>	Subcontractor Overhead and Profit
<input checked="" type="checkbox"/>	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
 Cost estimates are from 2009
 Area cost factor for Illinois is 1.15
 Included in estimate
 Includes 15% overhead and 10% profit

Low K Cover

COST WORKSHEET - LOW PERMEABILITY COVER AT SITE L

Site L

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Install 1.08 acres of RCRA Subtitle C cover at Site L
 Includes placement of unclassified fill to achieve contours.

DESCRIPTION	QTY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Unclassified Fill, 6" Lifts, Off-Site, Includes Delivery, Spreading, and Compaction	6150	CY	7.31	1.05	0.96	0.02 \$	57,446.23
Loam or topsoil, imported topsoil, 6" deep, furnish and place	1119	LCY	24.94	5.64	1.98	0.00 \$	36,432.60
Seeding, Vegetative Cover	1.11	ACR	796.80	570.09	207.39	0.00 \$	1,747.45
Drainage Netting, Geotextile Fabric Heat-bonded 2 Sides	53136	SF	0.60	0.09	0.01	0.00 \$	37,201.54
Bentonite, rolls, with geotextile fabric both sides, 3/8" thick	53136	SF	0.94	0.36	0.03	0.00 \$	70,531.04
40 Mil Polymeric Liner, High-density Polyethylene	53136	SF	0.41	0.22	0.02	0.00 \$	34,450.40

SUBTOTAL							\$237,809
Prime Contractor Overhead						15.0%	\$35,671
SUBTOTAL							\$273,481
Prime Contractor Profit						10.0%	\$27,348
TOTAL UNIT COST							\$300,829

Source of Cost Data:

RACER cost estimating software

Cost Adjustment Checklist:

Factor:	
X	H&S Productivity
X	Escalation to Base Year
X	Area Cost Factor
X	Subcontractor Overhead and Profit
X	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
 Cost estimates are from 2009
 Area cost factor for Illinois is 1.15
 Included in estimate
 Includes 15% overhead and 10% profit

Low K Cover

COST WORKSHEET - CAP MAINTENANCE

Cap Maintenance

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Cap maintenance at Sites G, H, I South and L for 1 year.

DESCRIPTION	QTY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
SITE G							
Loam or topsoil, imported topsoil, 6" deep, furnish and place	52	LCY	24.94	5.64	1.98	0.00	\$ 1,693.03
Seeding, Vegetative Cover	1	ACR	796.80	570.09	207.39	0.00	\$ 1,574.28
Fertilize, 800 Lbs/Acre, Spray from Truck	3	ACR	73.27	39.38	45.22	0.00	\$ 473.60
Mowing	6	ACR	0.00	297.82	0.00	0.00	\$ 1,786.94
Subtotal							\$ 5,527.84
SITE H							
Loam or topsoil, imported topsoil, 6" deep, furnish and place	99	LCY	24.94	5.64	1.98	0.00	\$ 3,223.26
Seeding, Vegetative Cover	1	ACR	796.80	570.09	207.39	0.00	\$ 1,574.28
Fertilize, 800 Lbs/Acre, Spray from Truck	5	ACR	73.27	39.38	45.22	0.00	\$ 789.33
Mowing	10	ACR	0.00	297.82	0.00	0.00	\$ 2,978.23
Subtotal							\$ 8,565.09
SITE I South							
Cap Maintenance (Delivery and placement of crushed stone)	1	LS	8,000.00	1,000.00	1,000.00		\$ 10,000.00
Subtotal							\$ 10,000.00
SITE L							
Loam or topsoil, imported topsoil, 6" deep, furnish and place	22	LCY	24.94	5.64	1.98	0.00	\$ 716.28
Seeding, Vegetative Cover	1	ACR	796.80	570.09	207.39	0.00	\$ 1,574.28
Fertilize, 800 Lbs/Acre, Spray from Truck	2	ACR	73.27	39.38	45.22	0.00	\$ 315.73
Mowing	3	ACR	0.00	297.82	0.00	0.00	\$ 893.47
Subtotal							\$ 3,499.76
SUBTOTAL							\$27,593
Prime Contractor Overhead						15.0%	\$4,139
SUBTOTAL							\$31,732
Prime Contractor Profit						10.0%	\$3,173
TOTAL UNIT COST PER YEAR							\$34,905

Source of Cost Data:

RACER cost estimating software

Cost Adjustment Checklist:

Factor:

- ☒ H&S Productivity
- ☒ Escalation to Base Year
- ☒ Area Cost Factor
- ☒ Subcontractor Overhead and Profit
- ☒ Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
Cost estimates are from 2009
Area cost factor for Illinois is 1.15
Included in estimate
Includes 15% overhead and 10% profit

COST WORKSHEET - 4-INCH DIAMETER LEACHATE RECOVERY WELL WITH PUMP

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Install one shallow 4-in. stainless steel well in waste to depth of 25 ft bgs using hollow stem auger drilling rig. Perform continuous soil sampling during drilling. Move soil cuttings to a rolloff box using a forklift and hopper. Construct surface completion consisting of concrete pad and flush-mount manway.
 Develop well using submersible pump. Install air-powered pump.

Cost per Sampling Event

DESCRIPTION	QTY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Mob/demob (pro-rated)	1	LS				30.00	\$ 30.00
Hollow stem augering	25	FT				14.00	\$ 350.00
Well installation	1.5	HR				145.00	\$ 217.50
Decon drilling equipment	1	HR				145.00	\$ 145.00
Level C Premium, 2 men	6	HR				80.00	\$ 480.00
Steam Cleaner	0.83	DAY				85.00	\$ 70.55
Bobcat Loader w/ Bucket	0.83	DAY				225.00	\$ 186.75
55 Gallon Drum (decon water)	0.5	EA				50.00	\$ 25.00
4"x10"Stainless Steel, Flush Thread Screen	1	EA				544.00	\$ 544.00
4"x10"Stainless Steel, Flush Thread Riser	1	EA				489.00	\$ 489.00
4"x5"Stainless Steel, Flush Thread Riser	1	EA				306.00	\$ 306.00
4" Steel Bottom Screw Plug	1	EA				116.00	\$ 116.00
4" Expandable Plug & Lock	1	EA				25.00	\$ 25.00
Filter Sand	8	BAG				10.00	\$ 80.00
Bentonite Chips	8	BAG				10.00	\$ 80.00
Bentonite grout	4	BAG				20.00	\$ 80.00
Flush Mt. Well Protector	1	EA				195.00	\$ 195.00
4'x4' Concrete Pad	1	EA				430.00	\$ 430.00
Geologist (oversee well installation)	5	HR		85.00			\$ 425.00
Technicians (well development)	4	HR		50.00			\$ 200.00
Truck	2	DAY			75.00		\$ 150.00
PID	1	DAY			50.00		\$ 50.00
Submersible pump	0.5	DAY			75.00		\$ 37.50
Generator	0.5	DAY			75.00		\$ 37.50
Technician (install pump)	2	HR		50.00			\$ 100.00
Air-powered pump with hoses, fittings, cycle counter	1	EA				2,800.00	\$ 2,800.00
SUBTOTAL							\$7,650
Prime Contractor Overhead (not applicable)					0.0%		\$0
SUBTOTAL							\$7,650
Prime Contractor Profit (not applicable)					0.0%		\$0
TOTAL UNIT COST							\$7,650

Source of Cost Data:

Drilling quote from Boart Longyear. Pump quote from QED. Rates for geologist based on typical labor rates.

Cost Adjustment Checklist:

Factor
<input checked="" type="checkbox"/> H&S Productivity
<input checked="" type="checkbox"/> Escalation to Base Year
<input checked="" type="checkbox"/> Area Cost Factor
<input checked="" type="checkbox"/> Subcontractor Overhead and Profit
<input checked="" type="checkbox"/> Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level C
 Cost estimates are from 2009
 Area cost factor for Illinois is 1.15
 Included in estimate

COST WORKSHEET - Site G Piping and Treatment System
 Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Install leachate treatment system and underground piping to the grid of leachate recovery wells at Site G.

Cost for

DESCRIPTION	QTY	Units	Materials	Labor	Equipment	SubBid	Unit Price	Extended Cost
Compressor, enclosure, and treatment system								
Compressor for air-powered leachate pumps	1	EA	8,000	2000				\$10,000.00
Enclosure for compressor and treatment system	1	EA	12000	1000				\$13,000.00
Bring electrical service to the enclosure	1	EA					\$5,000	\$5,000
Oil-water separator	1	EA					\$7,500.00	\$7,500.00
Transfer pump, level control	1	EA					\$4,000.00	\$4,000.00
SSK 18-2A Skid Mounted, Sand Media Filter unit	1	EA					\$12,461.43	\$12,461.43
PF-50 Cartridge/Bag Filter unit	1	EA					\$7,857.14	\$7,857.14
PV1000 Carbon Filter, Lead & Lag system	1	EA					\$19,500.00	\$19,500.00
Poly tank for backwashing of carbon filter	1	EA					\$1,200.00	\$1,200.00
Estimated inbound Freight for all Filtration Equipment	1	EA					\$3,577.56	\$3,577.56
Sales tax (8.25% of the total equipment purchase, excluding shipping)	1	EA					\$3,285.03	\$3,285.03
Trenching/Piping								
Cat 215, 1.0 CY, Soil, Shallow, Trenching, Excludes Sheeting, Excludes Dewatering	222.23	BCY	0.00	0.79	0.35	0.00	\$1.15	\$255.56
On-Site Backfill for Large Excavations, Includes Compaction	300	ECY	0.00	0.88	0.86	0.05	\$1.79	\$537.00
Backfill with Crushed Stone	55.55	CY	34.63	1.32	0.81	0.00	\$36.76	\$2,042.02
Compaction, subgrade, 18" wide, 8" lifts, walk behind, vibrating plate	55.55	ECY	0.00	2.54	0.18	0.00	\$2.72	\$151.10
4" PVC, Schedule 80, Connection Piping	1500	LF	6.67	11.09	0.00	0.00	\$17.76	\$26,640.00
SUBTOTAL								\$117,007
Prime Contractor Overhead							15%	\$17,551
SUBTOTAL								\$134,558
Prime Contractor Profit							10%	\$13,456
TOTAL UNIT COST								\$148,014

Source of Cost Data:

Trenching and piping costs based on RACER cost estimating software. Compressor, enclosure, and treatment system costs based on quotes or engineering judgment.

Cost Adjustment Checklist:

Factor:	
X	H&S Productivity
X	Escalation to Base Year
X	Area Cost Factor
X	Subcontractor Overhead and Profit
X	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
 Cost estimates are from 2009
 Area cost factor for Illinois is 1.15
 Included in estimate
 Includes 15% overhead and 10% profit

COST WORKSHEET - Site H Piping and Treatment System
 Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Install leachate treatment system and underground piping to the grid of leachate recovery wells at Site H.

Cost for

DESCRIPTION	QTY	Units	Materials	Labor	Equipment	SubBid	Unit Price	Extended Cost
Compressor, enclosure, and treatment system								
Compressor for air-powered leachate pumps	1	EA	8,000	2000				\$10,000.00
Enclosure for compressor and treatment system	1	EA	12000	1000				\$13,000.00
Bring electrical service to the enclosure	1	EA					\$5,000	\$5,000
Oil-water separator	1	EA	0.00	0.00	0.00	0.00	\$7,500.00	\$7,500.00
Transfer pump, level control	1	EA	0.00	0.00	0.00	0.00	\$4,000.00	\$4,000.00
SSK 18-2A Skid Mounted, Sand Media Filter unit	1	EA	0.00	0.00	0.00	0.00	\$12,461.43	\$12,461.43
PF-50 Cartridge/Bag Filter unit	1	EA	0.00	0.00	0.00	0.00	\$7,857.14	\$7,857.14
PV1000 Carbon Filter, Lead & Lag system	1	EA	0.00	0.00	0.00	0.00	\$19,500.00	\$19,500.00
Poly tank for backwashing of carbon filter	1	EA	0.00	0.00	0.00	0.00	\$1,200.00	\$1,200.00
Estimated inbound Freight for all Filtration Equipment	1	EA	0.00	0.00	0.00	0.00	\$3,577.56	\$3,577.56
Sales tax (8.25% of the total equipment purchase, excluding shipping)	1	EA	0.00	0.00	0.00	0.00	\$3,285.03	\$3,285.03
Trenching/Piping								
Cat 215, 1.0 CY, Soil, Shallow, Trenching, Excludes Sheeting, Excludes Dewatering	311.11	BCY	0.00	0.79	0.35	0.00	\$1.15	\$356.39
On-Site Backfill for Large Excavations, Includes Compaction	420	ECY	0.00	0.88	0.86	0.05	\$1.79	\$751.75
Backfill with Crushed Stone	77.78	CY	34.63	1.32	0.81	0.00	\$36.76	\$2,859.39
Compaction, subgrade, 18" wide, 8" lifts, walk behind, vibrating plate	77.78	ECY	0.00	2.54	0.18	0.00	\$2.72	\$211.29
4" PVC, Schedule 80, Connection Piping	2100	LF	6.67	11.09	0.00	0.00	\$17.76	\$37,295.93
SUBTOTAL								\$100,856
Prime Contractor Overhead							15%	\$15,128
SUBTOTAL								\$115,984
Prime Contractor Profit							10%	\$11,598
TOTAL UNIT COST								\$127,583

Source of Cost Data:

Trenching and piping costs based on RACER cost estimating software. Compressor, enclosure, and treatment system costs based on quotes or engineering.

Cost Adjustment Checklist:

Factor:

- ☒ H&S Productivity
- ☒ Escalation to Base Year
- ☒ Area Cost Factor
- ☒ Subcontractor Overhead and Profit
- ☒ Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
 Cost estimates are from 2009
 Area cost factor for Illinois is 1.15
 Included in estimate
 Includes 15% overhead and 10% profit

COST WORKSHEET - Site I South Piping and Treatment System
 Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Install two leachate treatment systems and underground piping to the grid of leachate recovery wells at Site I South.
 Site I South has two treatment systems due to the size of the site and number of wells.

Cost for

DESCRIPTION	QTY	Units	Materials	Labor	Equipment	SubBid	Unit Price	Extended Cost
Compressor, enclosure, and treatment system								
Compressor for air-powered leachate pumps	2	EA	8,000	2000				\$20,000.00
Enclosure for compressor and treatment system	2	EA	12000	1000				\$26,000.00
Bring electrical service to the enclosure	2	EA					\$5,000	\$10,000
Oil-water separator	2	EA	0.00	0.00	0.00	0.00	\$7,500.00	\$15,000.00
Transfer pump, level control	2	EA	0.00	0.00	0.00	0.00	\$4,000.00	\$8,000.00
SSK 18-2A Skid Mounted, Sand Media Filter unit	2	EA	0.00	0.00	0.00	0.00	\$12,461.43	\$24,922.86
PF-50 Cartridge/Bag Filter unit	2	EA	0.00	0.00	0.00	0.00	\$7,857.14	\$15,714.28
PV1000 Carbon Filter, Lead & Lag system	2	EA	0.00	0.00	0.00	0.00	\$19,500.00	\$39,000.00
Poly tank for backwashing of carbon filter	2	EA	0.00	0.00	0.00	0.00	\$1,200.00	\$2,400.00
Estimated inbound Freight for all Filtration Equipment	2	EA	0.00	0.00	0.00	0.00	\$3,577.56	\$7,155.12
Sales tax (8.25% of the total equipment purchase, excluding shipping)	1	EA	0.00	0.00	0.00	0.00	\$6,570.06	\$6,570.06
Trenching/Piping								
Cat 215, 1.0 CY, Soil, Shallow, Trenching, Excludes Sheeting, Excludes Dewatering	592.59	BCY	0.00	0.79	0.35	0.00	\$1.15	\$678.84
On-Site Backfill for Large Excavations, Includes Compaction	800	ECY	0.00	0.88	0.86	0.05	\$1.79	\$1,431.91
Backfill with Crushed Stone	148.15	CY	34.63	1.32	0.81	0.00	\$36.76	\$5,446.37
Compaction, subgrade, 18" wide, 8" lifts, walk behind, vibrating plate	148.15	ECY	0.00	2.54	0.18	0.00	\$2.72	\$402.46
4" PVC, Schedule 80, Connection Piping	4000	LF	6.67	11.09	0.00	0.00	\$17.76	\$71,039.88
SUBTOTAL								\$253,762
Prime Contractor Overhead								15% \$38,064
SUBTOTAL								\$291,826
Prime Contractor Profit								10% \$29,183
TOTAL UNIT COST								\$321,009

Source of Cost Data:

Trenching and piping costs based on RACER cost estimating software. Compressor, enclosure, and treatment system costs based on quotes or engineering judgment.

Cost Adjustment Checklist:

Factor:

<input checked="" type="checkbox"/>	H&S Productivity
<input checked="" type="checkbox"/>	Escalation to Base Year
<input checked="" type="checkbox"/>	Area Cost Factor
<input checked="" type="checkbox"/>	Subcontractor Overhead and Profit
<input checked="" type="checkbox"/>	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
 Cost estimates are from 2009
 Area cost factor for Illinois is 1.15
 Included in estimate
 Includes 15% overhead and 10% profit

Leachate Recovery Systems
 O&M of Systems at Sites G, H, and I South

COST WORKSHEET - O&M of Leachate Recovery Systems

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Operate and maintain leachate recovery and treatment systems at Sites G, H, and I South.

Includes sampling of effluent and replacement of GAC. Assume 79 wells at 1 gpm each = 41,500,000 gallons/year.

Cost per Year for O&M of leachate recovery and treatment systems at Sites G, H, and I South

DESCRIPTION	QTY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
System O&M							
Equipment Operator	1	YR		50,000			\$ 50,000.00
Replace leachate pumps	3	EA		100.00	2,800.00		\$ 8,700.00
Replace compressor	0.5	EA		500.00	5,000.00		\$ 2,750.00
Misc. parts	1	LS	5000				\$ 5,000.00
Carbon changeouts	10,000	LB	1.35				\$ 13,500.00
Electrical cost	12	MO	400				\$ 4,800.00
		1000					
Dishcharge to POTW	41,500	Gal				8.50	\$ 352,750.00
Sampling of Effluent							
Testing PCB, VOCs, SVOCs and Metals	24	EA				530.00	\$ 12,720.00
SUBTOTAL							\$450,220
							\$450,220
Prime Contractor Overhead (not applicable)					0.0%		\$0
SUBTOTAL							\$450,220
Prime Contractor Profit					0.0%		\$0
TOTAL UNIT COST							\$450,220

Source of Cost Data:

Very rough ballpark estimate.

Cost Adjustment Checklist:

Factor:

<input checked="" type="checkbox"/>	H&S Productivity
<input checked="" type="checkbox"/>	Escalation to Base Year
<input checked="" type="checkbox"/>	Area Cost Factor
<input checked="" type="checkbox"/>	Subcontractor Overhead and Profit
<input checked="" type="checkbox"/>	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
 Cost estimate are from 2009
 Area cost factor for Illinois is 1.15
 Included in estimate
 Not applicable

COST WORKSHEET - Leachate Well Plugging and Abandonment
 Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Plugging and Abandonment of 82 leachate recovery wells in year 30. Each well is 4-inch diameter and 25 ft deep. Total well footage is 82*25 ft = 2050 ft. Work can be performed in Level D PPE.

Cost for plugging and abandonment of 4-inch diameter monitoring wells (total footage of 1825 ft)

DESCRIPTION	QTY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Mob/demob	1	LS				495.00	\$ 495.00
Rig setup	82	EA				55.00	\$ 4,510.00
Grout wells	2050	FT				9.00	\$ 18,450.00
Submit Abandonment Reports	82	EA				35.00	\$ 2,870.00
Technician (oversight)	80	HR		50.00			\$ 4,000.00
Truck	8	DAY			75.00		\$ 600.00
SUBTOTAL							\$30,925
Prime Contractor Overhead (not applicable)						0.0%	\$0
SUBTOTAL							\$30,925
Prime Contractor Profit (not applicable)						0.0%	\$30,925
TOTAL UNIT COST							\$30,925

Source of Cost Data:

Quote from Roberts Environmental Drilling. Rates for technician based on typical labor rates.

Cost Adjustment Checklist:

Factor:

- ☒ H&S Productivity
- ☒ Escalation to Base Year
- ☒ Area Cost Factor
- ☒ Subcontractor Overhead and Profit
- ☒ Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
 Cost estimates are from 2009
 Quote from local driller
 Included in estimate

Soil or Crushed Rock Covers
Site G (inside fence)

COST WORKSHEET - SOIL COVER AT SITE G

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Install 2.53 acres of soil cover at Site G (central and northern portion of fenced area)
Includes clearing of vegetation and placement of unclassified fill to achieve contours.

DESCRIPTION	QTY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Clear and Grub							
Selective clearing, brush, medium clearing, with dozer and brush rake, excludes removal offsite	2.02	ACR	0.00	123.64	120.72	0.00 \$	493.61
Clear trees, wet conditions, medium growth, 200 H.P. dozer, excludes grubbing	0.51	ACR	0.00	1,349.78	1,296.23	0.00 \$	1,349.47
Site clearing trees, with 335 H.P. dozer, to 12" diameter	253	EA	0.00	5.11	7.45	0.00 \$	3,177.40
Remove stumps, wet conditions, with dozer, 6" to 12" diameter	51	EA	0.00	47.93	60.36	0.00 \$	5,522.89
Grub stumps, with 335 H.P. dozer, to 12" diameter	203	EA	0.00	3.07	5.93	0.00 \$	1,826.99
Grub and stack, 140 H.P. dozer	285.72	CY	0.00	3.07	1.84	0.00 \$	1,401.30
Cover							
Unclassified Fill, 6" Lifts, Off-Site, Includes Delivery, Spreading, and Compaction	2648	CY	7.31	1.05	0.96	0.02 \$	24,734.57
Silty/Clayey Loam, Delivered, Dumped & Spread	11863	CY	14.61	0.64	0.56	0.00 \$	187,659.68
Loam or topsoil, imported topsoil, 6" deep, furnish and place	2648	LCY	24.94	5.64	1.98	0.00 \$	86,214.06
Seeding, Seasonal Grass Mixture, Per Acre	2.6300001	ACR	743.31	407.10	329.61	0.00 \$	3,892.45
SUBTOTAL							\$302,501
Prime Contractor Overhead						15.0%	\$45,375
SUBTOTAL							\$347,876
Prime Contractor Profit						10.0%	\$34,788
TOTAL UNIT COST							\$382,663

Source of Cost Data:

RACER cost estimating software

Cost Adjustment Checklist:

Factor:	
X	H&S Productivity
X	Escalation to Base Year
X	Area Cost Factor
X	Subcontractor Overhead and Profit
X	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
Cost estimates are from 2009
Area cost factor for Illinois is 1.15
Included in estimate
Includes 15% overhead and 10% profit

Soil or Crushed Rock Covers
 Site H

COST WORKSHEET - SOIL COVER AT SITE H
 Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Install 4.87 acres of soil cover at Site H
 Includes placement of unclassified fill to achieve contours.

DESCRIPTION	QTY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Unclassified Fill, 6" Lifts, Off-Site, Includes Delivery, Spreading, and Compaction	5057	CY	7.31	1.05	0.96	0.02 \$	47,236.68
Silty/Clayey Loam, Delivered, Dumped & Spread	22654	CY	14.61	0.64	0.56	0.00 \$	358,361.49
Loam or topsoil, imported topsoil, 6" deep, furnish and place	5057	LCY	24.94	5.64	1.98	0.00 \$	164,646.71
Seeding, Seasonal Grass Mixture, Per Acre	5.0100002	ACR	743.31	407.10	329.61	0.00 \$	7,414.89
SUBTOTAL							\$577,660
Prime Contractor Overhead						15.0%	\$86,649
SUBTOTAL							\$664,309
Prime Contractor Profit						10.0%	\$66,431
TOTAL UNIT COST							\$730,740

Source of Cost Data:

RACER cost estimating software

Cost Adjustment Checklist:

Factor:	Notes:
<input checked="" type="checkbox"/> H&S Productivity	Cost estimate is based on Level D
<input checked="" type="checkbox"/> Escalation to Base Year	Cost estimates are from 2009
<input checked="" type="checkbox"/> Area Cost Factor	Area cost factor for Illinois is 1.15
<input checked="" type="checkbox"/> Subcontractor Overhead and Profit	Included in estimate
<input checked="" type="checkbox"/> Prime Contractor Overhead and Profit	Includes 15% overhead and 10% profit

COST WORKSHEET - CRUSHED ROCK COVER AT SITE I South

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Install 8.79 acres of crushed rock cover at Site I South
 Includes placement of unclassified fill to achieve contours.

DESCRIPTION	QTY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Unclassified Fill, 6" Lifts, Off-Site, Includes Delivery, Spreading, and Compaction	27415	CY	7.31	1.05	0.96	0.02	\$ 256,079.40
Crushed Stone, Surface Cover	7676	CY	31.90	2.97	3.39	0.00	\$ 293,636.28
SUBTOTAL							\$549,716
Prime Contractor Overhead							15.0% \$82,457
SUBTOTAL							\$632,173
Prime Contractor Profit							10.0% \$63,217
TOTAL UNIT COST							\$695,390

Source of Cost Data:

RACER cost estimating software

Cost Adjustment Checklist:

Factor:	
<input checked="" type="checkbox"/> H&S Productivity	
<input checked="" type="checkbox"/> Escalation to Base Year	
<input checked="" type="checkbox"/> Area Cost Factor	
<input checked="" type="checkbox"/> Subcontractor Overhead and Profit	
<input checked="" type="checkbox"/> Prime Contractor Overhead and Profit	

Notes:

Cost estimate is based on Level D
 Cost estimates are from 2009
 Area cost factor for Illinois is 1.15
 Included in estimate
 Includes 15% overhead and 10% profit

Soil or Crushed Rock Covers
 Site L

COST WORKSHEET - SOIL COVER AT SITE L
 Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Install 1.08 acres of soil cover at Site L
 Includes placement of unclassified fill to achieve contours.

DESCRIPTION	QTY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Unclassified Fill, 6" Lifts, Off-Site, Includes Delivery, Spreading, and Compaction	1119	CY	7.31	1.05	0.96	0.02 \$	10,452.41
Silty/Clayey Loam, Delivered, Dumped & Spread	5010	CY	14.61	0.64	0.56	0.00 \$	79,252.72
Loam or topsoil, imported topsoil, 6" deep, furnish and place	1119	LCY	24.94	5.64	1.98	0.00 \$	36,432.60
Seeding, Seasonal Grass Mixture, Per Acre	1.11	ACR	743.31	407.10	329.61	0.00 \$	1,642.82
SUBTOTAL							\$117,328
Prime Contractor Overhead						15.0%	\$17,599
SUBTOTAL							\$134,927
Prime Contractor Profit						10.0%	\$13,493
TOTAL UNIT COST							\$148,420

Source of Cost Data:

RACER cost estimating software

Cost Adjustment Checklist:

Factor:

- | | |
|---|--------------------------------------|
| X | H&S Productivity |
| X | Escalation to Base Year |
| X | Area Cost Factor |
| X | Subcontractor Overhead and Profit |
| X | Prime Contractor Overhead and Profit |

Notes:

Cost estimate is based on Level D
 Cost estimates are from 2009
 Area cost factor for Illinois is 1.15
 Included in estimate
 Includes 15% overhead and 10% profit

COST WORKSHEET - O&M OF SOIL OR CRUSHED ROCK COVERS, ALL SITES

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Cover maintenance at Sites G, G West, H, L, and I South.

DESCRIPTION	QTY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
SITE G							
Loam or topsoil, imported topsoil, 6" deep, furnish and place	52	LCY	24.94	5.64	1.98	0.00	\$ 1,693.03
Fertilize, 800 Lbs/Acre, Spray from Truck	3	ACR	73.27	39.38	45.22	0.00	\$ 473.60
Mowing	6	ACR	0.00	297.82	0.00	0.00	\$ 1,786.94
Seeding, Seasonal Grass Mixture, Per Acre	1	ACR	743.31	407.10	329.61	0.00	\$ 1,480.02
Subtotal							\$ 5,433.58
SITE H							
Loam or topsoil, imported topsoil, 6" deep, furnish and place	99	LCY	24.94	5.64	1.98	0.00	\$ 3,223.26
Fertilize, 800 Lbs/Acre, Spray from Truck	5	ACR	73.27	39.38	45.22	0.00	\$ 789.33
Mowing	10	ACR	0.00	297.82	0.00	0.00	\$ 2,978.23
Seeding, Seasonal Grass Mixture, Per Acre	1	ACR	743.31	407.10	329.61	0.00	\$ 1,480.02
Subtotal							\$ 8,470.84
SITE I							
Cover Maintenance (delivery and placement of crushed stone)	1	LS	8,000.00	1,000.00	1,000.00	0.00	\$ 10,000.00
Subtotal							\$ 10,000.00
SITE L							
Loam or topsoil, imported topsoil, 6" deep, furnish and place	22	LCY	24.94	5.64	1.98	0.00	\$ 716.28
Fertilize, 800 Lbs/Acre, Spray from Truck	2	ACR	73.27	39.38	45.22	0.00	\$ 315.73
Mowing	3	ACR	0.00	297.82	0.00	0.00	\$ 893.47
Seeding, Seasonal Grass Mixture, Per Acre	1	ACR	743.31	407.10	329.61	0.00	\$ 1,480.02
Subtotal							\$ 3,405.50
SUBTOTAL							\$27,310
Prime Contractor Overhead						15.0%	\$4,096
SUBTOTAL							\$31,406
Prime Contractor Profit						10.0%	\$3,141
TOTAL UNIT COST PER YEAR							\$34,547

Source of Cost Data:

RACER cost estimating software

Cost Adjustment Checklist:

Factor:

<input checked="" type="checkbox"/>	H&S Productivity
<input checked="" type="checkbox"/>	Escalation to Base Year
<input checked="" type="checkbox"/>	Area Cost Factor
<input checked="" type="checkbox"/>	Subcontractor Overhead and Profit
<input checked="" type="checkbox"/>	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
 Cost estimate from 2009
 Area cost factor for Illinois is 1.15
 Included in estimate
 Includes 15% overhead and 10% profit

COST WORKSHEET - PILOT TEST AT SITE I SOUTH

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Construct and install biosparge skid, including compressor, manifolds, piping and valves for air flow control.

Install carbon drum and connect with piping to the vent wells

1 month intensive PABS pilot test with GSI support.

11 month O&M period (technical oversight, electrical, carbon treatment of passive vent wells)

Sampling Program:

Pre-startup baseline sampling (soil and groundwater)

Intensive 1 month startup period sampling (groundwater with emphasis on DO distribution)

Routine: monthly (month 1-6 = 5 events), quarterly (month 9 and 12 = 2 events)

Post operation: Groundwater and soil characterization

Report Preparation

(This worksheet does not include costs for installation of nested biosparging wells at 70 ft and 100 ft at four locations, nested monitoring wells at 70 ft and 100 ft at ten locations, and passive vent wells at 35 ft at four locations.)

DESCRIPTION	QUANTITY	UOM	Cost	Extended Cost
Pulsed Air Biosparging System	1	EA	\$62,000	\$62,000
Startup	1	EA	\$47,000	\$47,000
O&M, Sampling, and Lab Costs	1	EA	\$84,000	\$84,000
Reporting	1	EA	\$20,000	\$20,000
SUBTOTAL				\$213,000
Prime Contractor Overhead (not applicable)			0.0%	\$0
SUBTOTAL				\$213,000
Prime Contractor Profit (not applicable)			0.0%	\$0
TOTAL UNIT COST				\$213,000

Source of Cost Data:

RACER cost estimating software

GSI Estimates

Cost Adjustment Checklist:

Factor:

Notes:

<input checked="" type="checkbox"/>	H&S Productivity
<input checked="" type="checkbox"/>	Escalation to Base Year
<input checked="" type="checkbox"/>	Area Cost Factor
<input checked="" type="checkbox"/>	Subcontractor Overhead and Profit
<input checked="" type="checkbox"/>	Prime Contractor Overhead and Profit

Cost estimate is based on Level D
 Cost estimates are from 2009
 Area cost factor for Illinois is 1.15
 Included in estimate
 Not applicable

Biosparge System
 Install Well Pair

COST WORKSHEET - INSTALLATION OF BIOSPARGE WELL PAIR IN MHU AND DHU
 Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Drill to 100 ft and install two stainless steel biosparge wells in the borehole, one to 70 ft and one to 100 ft.
 Move soil cuttings to a rolloff box. Construct surface completion consisting of concrete pad and 2 ft by 2 ft well vault
 Develop wells using submersible pump.

Cost per Sampling Event

DESCRIPTION	QTY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Mob/demob (pro-rated)	1	LS				400.00	\$ 400.00
Per diem and lodging	1	DAY				375.00	\$ 375.00
Rig setup, IDW handling	1	HR				275.00	\$ 275.00
6" X 7" sonic drilling with coring	100	FT				48.00	\$ 4,800.00
Install 2" SS well to 70 ft	70	FT				32.00	\$ 2,240.00
Install 2" SS well to 100 ft	100	FT				32.00	\$ 3,200.00
24" by 24" vault w/ concrete pad	1	LS				650.00	\$ 650.00
Skid-steer for IDW & equipment	0.2	WEEK				800.00	\$ 160.00
Geologist (oversee well installation)	10	HR		85.00			\$ 850.00
Technicians (well development)	8	HR		50.00			\$ 400.00
Truck	1.5	DAY			75.00		\$ 112.50
PID	1.5	DAY			50.00		\$ 75.00
Submersible pump	0.5	DAY			75.00		\$ 37.50
Generator	0.5	DAY			75.00		\$ 37.50
SUBTOTAL							\$13,613
Prime Contractor Overhead					0.0%		\$0
SUBTOTAL							\$13,613
Prime Contractor Profit					0.0%		\$0
TOTAL UNIT COST							\$13,613

Source of Cost Data:

Quote from Boart Longyear. Rates for geologist based on typical labor rates.

Cost estimates are from 2009

Cost Adjustment Checklist:

Factor:

- ☒ H&S Productivity
- ☒ Escalation to Base Year
- ☒ Area Cost Factor
- ☒ Subcontractor Overhead and Profit
- ☒ Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
 Current year (2009) is base year
 Quote from vendor for Sauget drilling
 Included in estimate

Biosparge System
 Vent Well

COST WORKSHEET - INSTALLATION OF 2-INCH DIAMETER VENT WELL

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Install 1 2-in. stainless steel vent well to depth of 35 ft bgs using hollow stem auger drilling rig. Perform continuous soil sampling during drilling. Move soil cuttings to a rolloff box using a forklift and hopper. Construct surface completion consisting of concrete pad and flush-mount manway. Develop well using submersible pump.

Cost per Sampling Event

DESCRIPTION	QTY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Mob/demob (pro-rated)	1	LS				30.00 \$	30.00
Level D PPE	1	DAY				30.00 \$	30.00
Hollow Stem Augering	35	FT				11.00 \$	385.00
Well Installation	1	HR				145.00 \$	145.00
Decon drilling equipment	1	HR				145.00 \$	145.00
Steam Cleaner	1	DAY				85.00 \$	85.00
Drum for decon water	1	EA				50.00 \$	50.00
Bobcat Loader with bucket	1	DAY				225.00 \$	225.00
2" x 10' Stainless Steel Flush Thread Screen	3	EA				378.00 \$	1,134.00
2" x 10' Stainless Steel Flush Thread Riser	1	EA				281.00 \$	281.00
2" Stainless Steel Bottom Screw Plug	1	EA				86.00 \$	86.00
2" Expandable Plug, Sch 40 & Lock	1	EA				20.00 \$	20.00
Filter Sand	9	Bags				10.00 \$	90.00
Bentonite Chips	4	Bags				10.00 \$	40.00
Bentonite Grout	10	Bags				20.00 \$	200.00
Flush Mount Well Protector 8"	1	EA				145.00 \$	145.00
2' x 2' Concrete Well Pad	1	EA				75.00 \$	75.00
Forklift and hopper	0.5	DAY			300.00	0.00 \$	150.00
Geologist (oversee well installation)	5	HR		85.00		\$	425.00
Technicians (well development)	5	HR		50.00		\$	250.00
Truck	1.5	DAY			75.00	\$	112.50
PID	1	DAY			50.00	\$	50.00
Submersible pump	0.5	DAY			75.00	\$	37.50
Generator	0.5	DAY			75.00	\$	37.50

Cost estimates are from 2009

SUBTOTAL \$4,229

Prime Contractor Overhead (not applicable) 0.0% \$0

SUBTOTAL \$4,229

Prime Contractor Profit (not applicable) 0.0% \$0

TOTAL UNIT COST **\$4,229**

Source of Cost Data:

Quote from Roberts Environmental Drilling. Rates for geologist based on typical labor rates.

Cost Adjustment Checklist:

Factor:

<input checked="" type="checkbox"/>	H&S Productivity
<input checked="" type="checkbox"/>	Escalation to Base Year
<input checked="" type="checkbox"/>	Area Cost Factor
<input checked="" type="checkbox"/>	Subcontractor Overhead and Profit
<input checked="" type="checkbox"/>	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
 Current year (2009) is base year
 Quote from vendor for Sauget drilling
 Included in estimate

COST WORKSHEET - BIOSPARGE SYSTEM INSTALLATION AT SITE G

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Construct and install biosparge skid, including compressor, manifolds, piping and valves for air flow control.

Construction includes trenching costs and assumes 140 hours of field technician oversight

Installation of electric supply to the entire treatment area at Sites G, H, and I South was estimated at \$38,100. This cost is not included in this worksheet but is included in the summary worksheet for the combined biosparge systems.

DESCRIPTION	QUANTITY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Organic Vapor Analyzer	7	DAY				40.91	\$286.37
Equipment Enclosure	1	EA	\$12,538.80	\$851.25			\$13,390.05
Field Technician	140	HR		\$36.10			\$5,054.00
Carbon Steel Piping	660	LF	\$3.32	\$5.96			\$6,124.80
Manifold Piping	100	LF	\$31.35	\$19.61			\$5,096.00
Ball Valve	28	EA	\$24.89				\$696.92
Carbon Steel Tee	24	EA	\$170.67	\$401.10			\$13,722.48
Carbon Steel 90-degree elbo	24	EA	\$109.48	\$261.46			\$8,902.56
Air Compressor (101 SCFM)	1	EA	\$14,280.30	\$3,570.20			\$17,850.50
Pressure Gauge	28	EA	\$93.69	\$70.83			\$4,606.56
Trenching	660	FT		\$26.48			\$17,475.22

SUBTOTAL		<u>\$93,205</u>
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Prime Contractor Overhead	15.0%	<u>\$13,981</u>
SUBTOTAL		<u>\$107,186</u>

Prime Contractor Profit	10.0%	\$10,719
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TOTAL UNIT COST		<u>\$117,905</u>
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Source of Cost Data:

RACER cost estimating software

Cost Adjustment Checklist:

Factor:

X	H&S Productivity
X	Escalation to Base Year
X	Area Cost Factor
X	Subcontractor Overhead and Profit
X	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
 Cost estimates are from 2009
 Area cost factor for Illinois is 1.15
 Included in estimate
 Includes 15% overhead and 10% profit

Pulsed Air Biosparging Systems
 Construction for Site H

COST WORKSHEET - BIOSPARGE SYSTEM INSTALLATION AT SITE H
 Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Construct and install biosparge skid, including compressor, manifolds, piping and valves for air flow control.
 Construction includes trenching costs and assumes 140 hours of field technician oversight

Cost for

DESCRIPTION	QUANTITY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Organic Vapor Analyzer	7	DAY				40.91	\$286.37
Equipment Enclosure	1	EA	\$12,538.80	\$851.25			\$13,390.05
Field Technician	140	HR		\$36.10			\$5,054.00
Carbon Steel Piping	840	LF	\$3.32	\$5.96			\$7,795.20
Manifold Piping	100	LF	\$31.35	\$19.61			\$5,096.00
Ball Valve	34	EA	\$24.89				\$846.26
Carbon Steel Tee	30	EA	\$170.67	\$401.10			\$17,153.10
Carbon Steel 90-degree elbo	30	EA	\$109.48	\$261.46			\$11,128.20
Air Compressor (101 SCFM)	1	EA	\$14,280.30	\$3,570.20			\$17,850.50
Pressure Gauge	34	EA	\$93.69	\$70.83			\$5,593.68
Trenching	840	FT		\$26.48			\$22,241.18
SUBTOTAL							\$106,435
Prime Contractor Overhead						15.0%	\$15,965
SUBTOTAL							\$122,400
Prime Contractor Profit						10.0%	\$12,240
TOTAL UNIT COST							\$134,640

Source of Cost Data:

RACER cost estimating software

Cost Adjustment Checklist:

Factor:

<input checked="" type="checkbox"/>	H&S Productivity
<input checked="" type="checkbox"/>	Escalation to Base Year
<input checked="" type="checkbox"/>	Area Cost Factor
<input checked="" type="checkbox"/>	Subcontractor Overhead and Profit
<input checked="" type="checkbox"/>	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
 Cost estimates are from 2009
 Area cost factor for Illinois is 1.15
 Included in estimate
 Includes 15% overhead and 10% profit

COST WORKSHEET - BIOSPARGE SYSTEM INSTALLATION AT SITE I (#1)

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Construct and install biosparge skid, including compressor, manifolds, piping and valves for air flow control.
 Construction includes trenching costs and assumes 140 hours of field technician oversight

Cost for

DESCRIPTION	QUANTITY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Organic Vapor Analyzer	7	DAY				40.91	\$286.37
Equipment Enclosure	1	EA	\$12,538.80	\$851.25			\$13,390.05
Field Technician	140	HR		\$36.10			\$5,054.00
Carbon Steel Piping	580	LF	\$3.32	\$5.96			\$5,382.40
Manifold Piping	100	LF	\$31.35	\$19.61			\$5,096.00
Ball Valve	24	EA	\$24.89				\$597.36
Carbon Steel Tee	22	EA	\$170.67	\$401.10			\$12,578.94
Carbon Steel 90-degree elbow	22	EA	\$109.48	\$261.46			\$8,160.68
Air Compressor (101 SCFM)	1	EA	\$14,280.30	\$3,570.20			\$17,850.50
Pressure Gauge	24	EA	\$93.69	\$70.83			\$3,948.48
Trenching	580	FT		\$26.48			\$15,357.01

SUBTOTAL \$87,702

Prime Contractor Overhead 15.0% \$13,155

SUBTOTAL \$100,857

Prime Contractor Profit 10.0% \$10,086

TOTAL UNIT COST **\$110,943**

Source of Cost Data:

RACER cost estimating software

Cost Adjustment Checklist:

Factor:

<input checked="" type="checkbox"/>	H&S Productivity
<input checked="" type="checkbox"/>	Escalation to Base Year
<input checked="" type="checkbox"/>	Area Cost Factor
<input checked="" type="checkbox"/>	Subcontractor Overhead and Profit
<input checked="" type="checkbox"/>	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
 Cost estimates are from 2009
 Area cost factor for Illinois is 1.15
 Included in estimate
 Includes 15% overhead and 10% profit

COST WORKSHEET - BIOSPARGE SYSTEM INSTALLATION AT SITE I (#2)

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Construct and install biosparge skid, including compressor, manifolds, piping and valves for air flow control.
Construction includes trenching costs and assumes 140 hours of field technician oversight

Cost for

DESCRIPTION	QUANTITY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Organic Vapor Analyzer	7	DAY				40.91	\$286.37
Equipment Enclosure	1	EA	\$12,538.80	\$851.25			\$13,390.05
Field Technician	140	HR		\$36.10			\$5,054.00
Carbon Steel Piping	600	LF	\$3.32	\$5.96			\$5,568.00
Manifold Piping	100	LF	\$31.35	\$19.61			\$5,096.00
Ball Valve	25	EA	\$24.89				\$622.25
Carbon Steel Tee	22	EA	\$170.67	\$401.10			\$12,578.94
Carbon Steel 90-degree elbc	22	EA	\$109.48	\$261.46			\$8,160.68
Air Compressor (101 SCFM)	1	EA	\$14,280.30	\$3,570.20			\$17,850.50
Pressure Gauge	25	EA	\$93.69	\$70.83			\$4,113.00
Trenching	600	FT		\$26.48			\$15,886.56

SUBTOTAL \$88,606

Prime Contractor Overhead 15.0% \$13,291

SUBTOTAL \$101,897

Prime Contractor Profit 10.0% \$10,190

TOTAL UNIT COST **\$112,087**

Source of Cost Data:

RACER cost estimating software

Cost Adjustment Checklist:

Factor:

<input checked="" type="checkbox"/>	H&S Productivity
<input checked="" type="checkbox"/>	Escalation to Base Year
<input checked="" type="checkbox"/>	Area Cost Factor
<input checked="" type="checkbox"/>	Subcontractor Overhead and Profit
<input checked="" type="checkbox"/>	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
Cost estimates are from 2009
Area cost factor for Illinois is 1.15
Included in estimate
Includes 15% overhead and 10% profit

COST WORKSHEET - BIOSPARGE SYSTEM INSTALLATION AT SITE I (#3)

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Construct and install biosparge skid, including compressor, manifolds, piping and valves for air flow control.
 Construction includes trenching costs and assumes 140 hours of field technician oversight

Cost for

DESCRIPTION	QUANTITY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Organic Vapor Analyzer	7	DAY				40.91	\$286.37
Equipment Enclosure	1	EA	\$12,538.80	\$851.25			\$13,390.05
Field Technician	140	HR		\$36.10			\$5,054.00
Carbon Steel Piping	660	LF	\$3.32	\$5.96			\$6,124.80
Manifold Piping	100	LF	\$31.35	\$19.61			\$5,096.00
Ball Valve	27	EA	\$24.89				\$672.03
Carbon Steel Tee	24	EA	\$170.67	\$401.10			\$13,722.48
Carbon Steel 90-degree elbow	24	EA	\$109.48	\$261.46			\$8,902.56
Air Compressor (101 SCFM)	1	EA	\$14,280.30	\$3,570.20			\$17,850.50
Pressure Gauge	27	EA	\$93.69	\$70.83			\$4,442.04
Trenching	660	FT		\$26.48			\$17,475.22
SUBTOTAL							<u>\$93,016</u>
Prime Contractor Overhead						15.0%	<u>\$13,952</u>
SUBTOTAL							<u>\$106,968</u>
Prime Contractor Profit						10.0%	<u>\$10,697</u>
TOTAL UNIT COST							<u>\$117,665</u>

Source of Cost Data:

RACER cost estimating software

Cost Adjustment Checklist:

Factor:

- | | |
|---|--------------------------------------|
| X | H&S Productivity |
| X | Escalation to Base Year |
| X | Area Cost Factor |
| X | Subcontractor Overhead and Profit |
| X | Prime Contractor Overhead and Profit |

Notes:

Cost estimate is based on Level D
 Cost estimates are from 2009
 Area cost factor for Illinois is 1.15
 Included in estimate
 Includes 15% overhead and 10% profit

COST WORKSHEET - BIOSPARGE SYSTEM INSTALLATION AT SITE I (#4)

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Construct and install biosparge skid, including compressor, manifolds, piping and valves for air flow control.
 Construction includes trenching costs and assumes 140 hours of field technician oversight

Cost for

DESCRIPTION	QUANTITY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Organic Vapor Analyzer	7	DAY				40.91	\$286.37
Equipment Enclosure	1	EA	\$12,538.80	\$851.25			\$13,390.05
Field Technician	140	HR		\$36.10			\$5,054.00
Carbon Steel Piping	660	LF	\$3.32	\$5.96			\$6,124.80
Manifold Piping	100	LF	\$31.35	\$19.61			\$5,096.00
Ball Valve	28	EA	\$24.89				\$696.92
Carbon Steel Tee	24	EA	\$170.67	\$401.10			\$13,722.48
Carbon Steel 90-degree elbow	24	EA	\$109.48	\$261.46			\$8,902.56
Air Compressor (101 SCFM)	1	EA	\$14,280.30	\$3,570.20			\$17,850.50
Pressure Gauge	28	EA	\$93.69	\$70.83			\$4,606.56
Trenching	660	FT		\$26.48			\$17,475.22

SUBTOTAL		<u>\$93,205</u>
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Prime Contractor Overhead	15.0%	<u>\$13,981</u>
SUBTOTAL		\$107,186

Prime Contractor Profit	10.0%	\$10,719
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TOTAL UNIT COST		\$117,905
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Source of Cost Data:

RACER cost estimating software

Cost Adjustment Checklist:

Factor:

X	H&S Productivity
X	Escalation to Base Year
X	Area Cost Factor
X	Subcontractor Overhead and Profit
X	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
 Cost estimates are from 2009
 Area cost factor for Illinois is 1.15
 Included in estimate
 Includes 15% overhead and 10% profit

COST WORKSHEET - BIOSPARGE SYSTEM INSTALLATION AT SITE I (#5)

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Construct and install biosparge skid, including compressor, manifolds, piping and valves for air flow control.
 Construction includes trenching costs and assumes 140 hours of field technician oversight

Cost for

DESCRIPTION	QUANTITY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Organic Vapor Analyzer	7	DAY				40.91	\$286.37
Equipment Enclosure	1	EA	\$12,538.80	\$851.25			\$13,390.05
Field Technician	140	HR		\$36.10			\$5,054.00
Carbon Steel Piping	460	LF	\$3.32	\$5.96			\$4,268.80
Manifold Piping	100	LF	\$31.35	\$19.61			\$5,096.00
Ball Valve	20	EA	\$24.89				\$497.80
Carbon Steel Tee	18	EA	\$170.67	\$401.10			\$10,291.86
Carbon Steel 90-degree elbow	18	EA	\$109.48	\$261.46			\$6,676.92
Air Compressor (101 SCFM)	1	EA	\$14,280.30	\$3,570.20			\$17,850.50
Pressure Gauge	20	EA	\$93.69	\$70.83			\$3,290.40
Trenching	460	FT		\$26.48			\$12,179.70

SUBTOTAL \$78,882

Prime Contractor Overhead 15.0% \$11,832
 SUBTOTAL \$90,715

Prime Contractor Profit 10.0% \$9,071

TOTAL UNIT COST \$99,786

Source of Cost Data:

RACER cost estimating software

Cost Adjustment Checklist:

Factor:

<input checked="" type="checkbox"/>	H&S Productivity
<input checked="" type="checkbox"/>	Escalation to Base Year
<input checked="" type="checkbox"/>	Area Cost Factor
<input checked="" type="checkbox"/>	Subcontractor Overhead and Profit
<input checked="" type="checkbox"/>	Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
 Cost estimates are from 2009
 Area cost factor for Illinois is 1.15
 Included in estimate
 Includes 15% overhead and 10% profit

Pulsed Air Biosparging Systems
 Construction for Sites G, H, and I South

COST WORKSHEET - BIOSPARGE SYSTEM INSTALLATION AT ALL SITES

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Construct and install biosparge skid, including compressor, manifolds, piping and valves for air flow control. Trenching and field staff labor rates are included in the estimates. Well installation costs are not included.

Cost for

DESCRIPTION	QUANTITY	UOM	Materials	Labor	Extended Cost
Site G	1	EA	\$42,476	\$50,730	\$93,205
Site H	1	EA	\$45,465	\$60,969	\$106,435
Site I (#1)	1	EA	\$41,175	\$46,526	\$87,702
Site I (#2)	1	EA	\$41,360	\$47,246	\$88,606
Site I (#3)	1	EA	\$42,357	\$50,659	\$93,016
Site I (#4)	1	EA	\$42,476	\$50,730	\$93,205
Site I (#5)	1	EA	\$39,182	\$39,700	\$78,882
Electrical service	1	EA			\$38,100
SUBTOTAL					\$679,152
Prime Contractor Overhead				15.0%	\$101,873
SUBTOTAL					\$781,025
Prime Contractor Profit				10.0%	\$78,102
TOTAL COST FOR SITES G, H, AND I SOUTH (excluding wells)					\$859,127

Source of Cost Data:

RACER cost estimating software

Cost Adjustment Checklist:

Factor:

Notes:

<input checked="" type="checkbox"/>	H&S Productivity	Cost estimate is based on Level D
<input checked="" type="checkbox"/>	Escalation to Base Year	Cost estimates are from 2009
<input checked="" type="checkbox"/>	Area Cost Factor	Area cost factor for Illinois is 1.15
<input checked="" type="checkbox"/>	Subcontractor Overhead and Profit	Included in estimate
<input checked="" type="checkbox"/>	Prime Contractor Overhead and Profit	Includes 15% overhead and 10% profit

COST WORKSHEET - BIOSPARGE O&M AT SITES G, H, I
 Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Operation and maintenance cost at Sites G, H, I (includes electrical usage, system operator and provision for compressor replacement)
 Compressor replacement cost assumed at one-half compressor for the entire treatment area per year
 Reported values represent cost per year (\$/year)
 Assume one drum of vapor phase carbon per year for each passive vent well
 Groundwater and Soil sampling costs have not been included in this estimate. A detailed sampling program will be developed after the completion of the PABS pilot test and will incorporate the findings from the pilot test.

Cost for

DESCRIPTION	QUANTITY	UOM	Electrical	Operator	Equipment	Extended Cost
Site G	1	EA	\$13,181	\$7,709	\$956	\$21,846
Site H	1	EA	\$16,476	\$7,709	\$956	\$25,141
Site I (#1)	1	EA	\$12,082	\$7,709	\$956	\$20,747
Site I (#2)	1	EA	\$12,082	\$7,709	\$956	\$20,747
Site I (#3)	1	EA	\$13,181	\$7,709	\$956	\$21,846
Site I (#4)	1	EA	\$13,181	\$7,709	\$956	\$21,846
Site I (#5)	1	EA	\$9,886	\$7,709	\$956	\$18,551
Carbon drums	82	EA			\$500	\$41,000
SUBTOTAL						\$191,723
Prime Contractor Overhead					15.0%	\$28,759
SUBTOTAL						\$220,482
Prime Contractor Profit					10.0%	\$22,048
TOTAL UNIT COST						\$242,530

Source of Cost Data:

RACER cost estimating software and ballpark number for carbon drums

Cost Adjustment Checklist:

Factor:	Notes:
X H&S Productivity	Cost estimate is based on Level D
X Escalation to Base Year	Cost estimates are from 2009
X Area Cost Factor	Area cost factor for Illinois is 1.15
X Subcontractor Overhead and Profit	Included in estimate
X Prime Contractor Overhead and Profit	Includes 15% overhead and 10% profit

Biosparge System
 P&A of Wells

COST WORKSHEET - Biosparge Well Plugging and Abandonment

Sauget Area 1 Feasibility Study, Sauget and Cahokia, Illinois

Work Statement:

Plugging and Abandonment of sparge wells and vent wells at 82 locations in year 30. Each location has 35 ft, 70 ft, and 100 ft well. Total footage is 16,810 feet. All wells are 2-inch diameter with flush to grade well completions. Work can be performed in Level D PPE.

Cost for plugging and abandonment of 2-inch diameter vent and biosparge wells (total footage of 16,680 ft)

DESCRIPTION	QTY	UOM	Materials	Labor	Equipment	SubBid	Extended Cost
Mob/demob	1	LS				495.00	\$ 495.00
Rig setup	82	LS				55.00	\$ 4,510.00
Grout wells	16810	FT				7.00	\$ 117,670.00
Submit Abandonment Reports	82	EA				35.00	\$ 2,870.00
Technician (oversight)	200	HR		50.00			\$ 10,000.00
Truck	20	DAY			75.00		\$ 1,500.00
SUBTOTAL							\$137,045
Prime Contractor Overhead (not applicable)					0.0%		\$0
SUBTOTAL							\$137,045
Prime Contractor Profit (not applicable)					0.0%		\$0
TOTAL UNIT COST							\$137,045

Source of Cost Data:

Quote from Roberts Environmental Drilling. Rates for technician based on typical labor rates.

Cost Adjustment Checklist:

Factor:

- ☒ H&S Productivity
- ☒ Escalation to Base Year
- ☒ Area Cost Factor
- ☒ Subcontractor Overhead and Profit
- ☒ Prime Contractor Overhead and Profit

Notes:

Cost estimate is based on Level D
 Cost estimates are from 2009
 Quote from local driller
 Included in estimate